

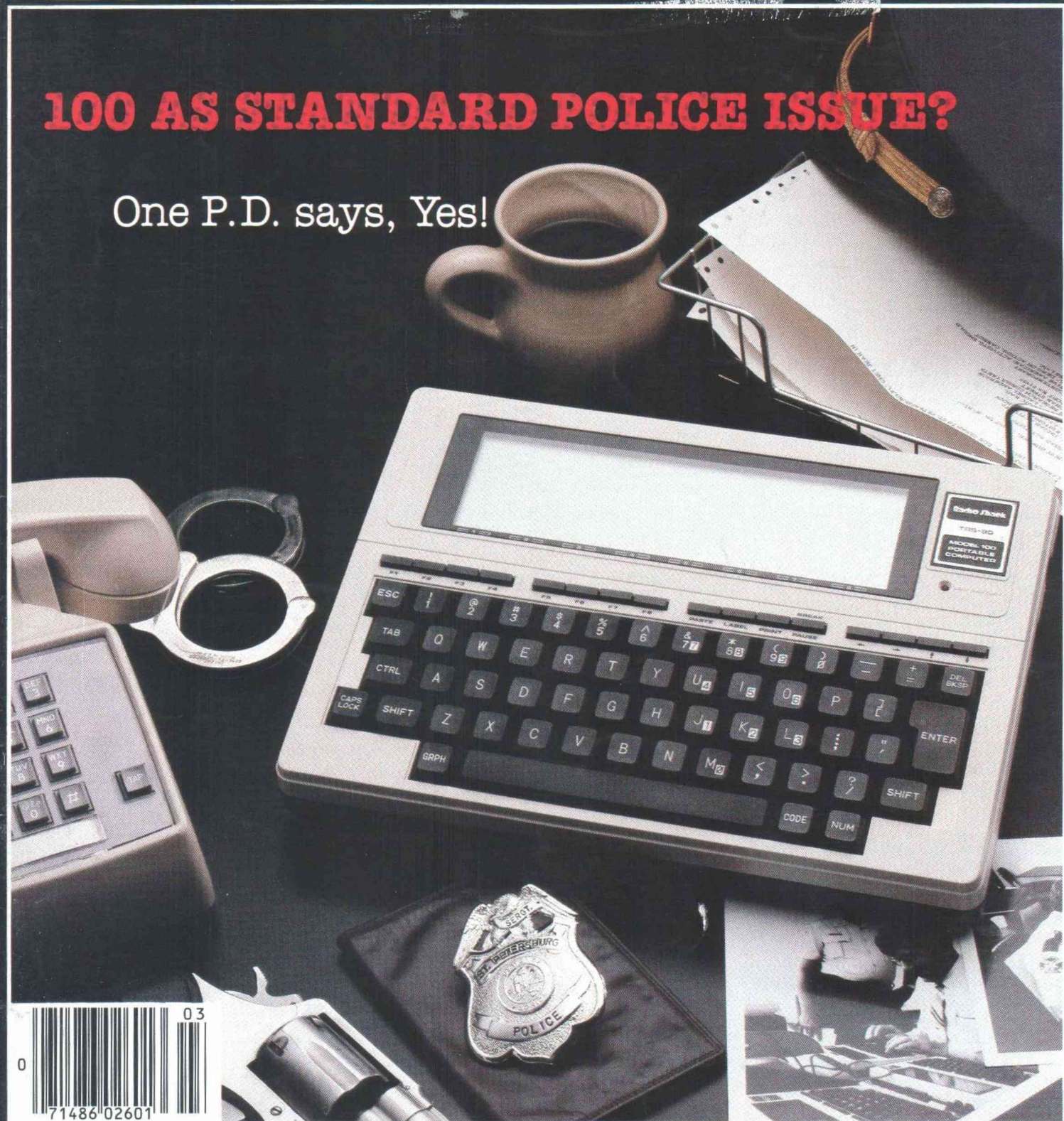
portable

100/200

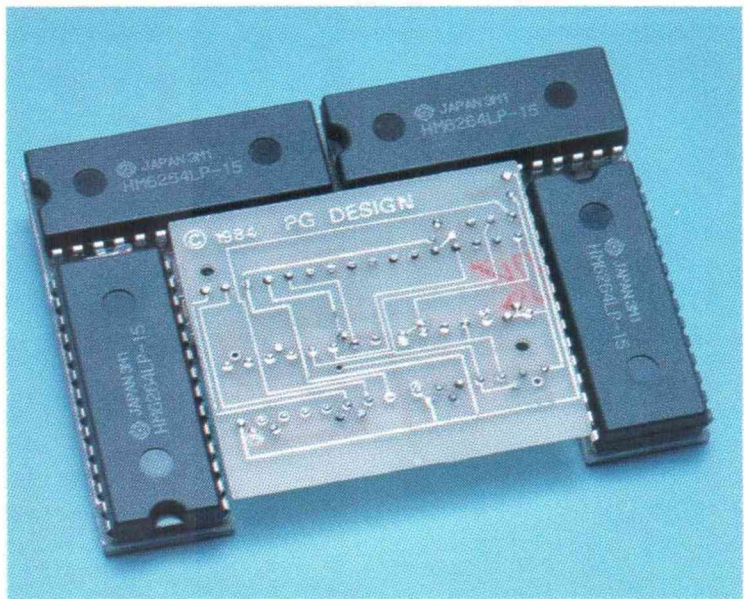
FOR USERS OF TANDY BRIEFCASE COMPUTERS

100 AS STANDARD POLICE ISSUE?

One P.D. says, Yes!



32K RAM CHIPS FOR YOUR MODEL 100



- Expand your (8K, 16K, 24K, or 32K) Model 100 to an additional 32K.
- Store two 32K programs without having to reload.
- Each 32K is bank selectable with a single line BASIC program (programs may not transfer information between banks).
- The application programs already in your Model 100 (BASIC, TEXT, TELECOM, ADDRSS, SCHEDL) may be used in either bank.
- The expansion RAM maintains its own menu of the data stored in it.

- Self-contained battery backup power
- Low power CMOS design, enhances battery life.
- Go beyond the memory range by installing additional 32K modules without losing the data on the first 32K module.
- Easy installation! Installs into the expansion bus in the bottom of the Model 100 — Then concealed once the cover is reinstalled.
- High quality manufacturing and warranty.
- The problem of "more memory" for the Model 100 no longer exists. We've made a great computer near perfect!
- List 325.00 (Just one third the cost of an additional Model 100.)




**P.G.
DESIGN
ELECTRONICS, INC.**

66040 GRATIOT, RICHMOND, MICH. 48062 (313) 727-2744

NO WARRANTY ON BATTERIES TRS-80 TRADE MARK RADIO SHACK
DEALER INQUIRIES INVITED

34 ON READER SERVICE CARD

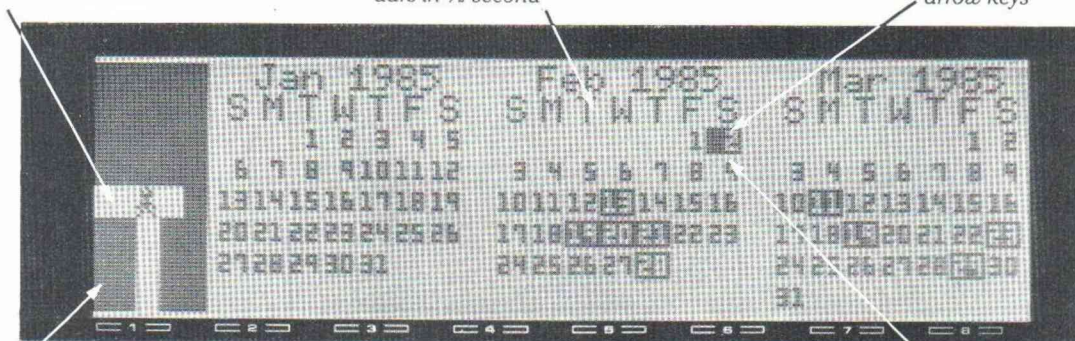
**"It's about time someone
wrote this software."**

We've done it with TMPC (The Most Precious Commodity)

Exclusive *Floor Plan
interface

Fast machine language
program displays calen-
dars in 1/2 second

Current day flashes, and
can be changed with
arrow keys



Fourteen other screens
handle projects, print
diaries, and monitor files

Appointments for indi-
cated day displayed with
a single keystroke

Your TRS-80 Model 100 probably saves you time already. So why not use it to *manage* your time? The **TMPC** software from Acroatix trans-
forms your Model 100 into a command center for appointments and projects.

More than a Calendar

Your Model 100 deserves more than a simple-minded replacement of a date book. The **TMPC** is designed around principles from Stephanie Winston's *The Organized Executive*, a popular self-improvement guide for anyone who wants to be better organized. Every **TMPC** feature has been carefully designed and tested to work for you.

Interested? Ask for our free demonstration program today. If you have a modem cable, we will

send it over the phone (see the box); the call takes about five minutes. Otherwise, send us \$3.00 for handling and we'll send a cassette with the sample. Discover the old-fashioned value in **TMPC's** space age design, and you'll agree that, "It's about time someone wrote this software."

AUTO LOG-ON PROGRAM FOR:

Free Sample

```
10 P$="16176575422"+
   "<==^D^D?1tmPC^M?s>"
20 M=VARPTR (P$)
30 A=PEEK (M+1) + 256*PEEK (M+2)
40 CALL 21200
50 CALL 21293, 0, A
60 LOAD "MDM:8N1D", R
```

Note: Before running this program, connect your Model 100 to a telephone with the Radio Shack modem cable (see page 76 of the owners manual). Set TELCOM status to M8N1D.

Massachusetts residents must remove the area code in line 10.

TMPC by Acroatix
\$49.95 + \$3.00 shipping
Phone orders call
1-800-448-4511 Ext. (353)
NY 1-800-962-1480 Ext. (353)
(operators take orders only)



COD orders accepted

Ac'ro•ă'tix Incorporated
P.O. Box 273 Wilmington, MA 01887

portable

100/200 VOLUME 2 NUMBER 6 MARCH 1985

portable

100/200

Publisher
James S. Povec
Associate Publisher
Carl Cramer
Editorial Director
Bruce A. Taylor

Associate Editor
Nancy L. Laite
Contributing Editors
Bill Walters
Terry Kepner
Technical Support
Alan Zeichick

Art Director
Paige Garland Parker
Design Consultant
David Strauch
Advertising Production
Peter D. Koons
Production Assistant
Marjorie Strauss

Advertising Director
James W. McBrien, Jr.

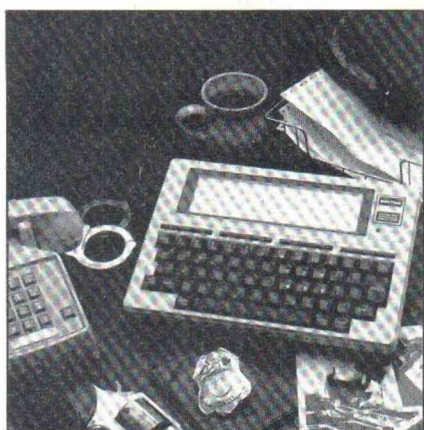
Circulation Director
Nancy A. Wight
Accounts Payable/Receivable
April Jenkins
Special Projects
Bonnie Helevig

Editorial, Advertising, and
Business Offices
Portable 100/200
P.O. Box 250, Highland Mill
Camden, ME 04843
Telephone: (207) 236-4365
CompuServe Information
Service ID: 76703,372

Portable 100/200 is published monthly by Computer Communications, Inc., a Maine corporation with offices at Highland Mill, Camden, ME 04843; James S. Povec, president; Carl A. Cramer, vice president and treasurer.

Computer Communications, Inc. is solely responsible for the contents of this magazine and reserves all rights to itself. Contents may not be reproduced in whole or in part unless expressly authorized in writing by the Publisher. TRS-80, Model 100 and Tandy 200 are trademarks of the Radio Shack Division of Tandy Corporation.

Contributors: manuscripts and photographs are welcomed. Publisher assumes no responsibility for the return of unsolicited manuscripts, queries, or artwork. Materials submitted for consideration should be accompanied by a stamped, self-addressed envelope. Unsolicited material may be published at the discretion of the Publisher. By making unsolicited submission to Portable 100/200, the author grants permission to publish the material in exchange for payment at the magazine's regular rates unless other advance agreement is made in writing. Payment is made in the month following the month of publication. Subscriptions are \$32 for twelve issues. User Group subscription rates available. Rates for delivery outside the U.S.A., please inquire. Postmaster: Please send changes of address to Portable 100 at the above address. Application for mailing at second class rates pending at Camden, Maine, and additional mailing offices. Dealer inquiries invited. U.S.A. Newsstand distribution by Curtis Circulation Company.
ISSN 0738-7016



COVER

100 Helps St. Pete Cops Beat the Paperwork Blues 35
By Jim Lamb
"A man on the beat who is jotting down notes or filling out a form is carrying . . . information that could be . . . vital . . ."

FEATURE

Multiplan Puts Plenty of What If Power Into Your 100/200 44
By William T. Walters
It's a built-in feature on the Tandy 200 and a Rom snap-on for the Model 100. And it gives you lots of useful spreadsheet analysis capability.

ARTICLES

Winter CES: Music, Video, Computers, Gadgets — and the All New 1985 Trojan Horse! 6
By Mike Greenly

Plug-In Rom Makes Spreadsheets a Snap 17
By Carl Oppedahl
With Lucid, the 100 becomes a master at integrated tricks; Lotus 1-2-3 and Multiplan have met their match.

Your 100's Only As Good As Its Energy Supply 33

By Larry Berg
It may surprise you how the Model 100 divvies out its power supply. Presented here are some tips for getting the most out of your batteries.

Come on, Wanna Cut Some Machine Language Bytes On the Model 100? 50

By Ronald F. Balonis
Cobug is a simplified BASIC assembler program to help you get started.

Spread — Part 3: A Maestro For Mortgages 66

By Woods Martin
Payments on a variable rather than a fixed mortgage may take the sting out of monthly payments, but they're murder to figure. Spread offers a detailed Mortgage Schedule Model for quicker payment analysis.

REVIEWS

Telecommuter 56
Sigea Systems Inc.

TouchBase Modem 68
TouchBase Design

Idea 2.12 70
Traveling Software Inc.

DEPARTMENTS

Full Duplex 23
By Terry Kepner

COLUMNS

Preview 4
Mail 100/200 11
User Groups 27
Books 28
New Products 58
The Wire 72

Cover by Mark Rockwood
Feature photographs by John Coffeen.

Adopt a Chipmunk™ and take your office with you...



You probably never thought about adopting a chipmunk before. But our Chipmunk™ might make you think twice. Imagine the storage capacity and speed of a disk drive in your briefcase, battery-powered and ready to go to work for you — anytime, anywhere — for only \$599 — includes 6 software programs.

Give your TRS-80® Model 100 a Chipmunk to play with and take desktop computing power wherever you go. Our business is to help your business with fast, reliable disk storage that's truly portable. And affordable, too!

The CDOS operating system is function key driven, versatile, and a cinch to learn and use. Whether it's word processing, spreadsheets, data bases, or applications you write yourself, our Chipmunk is a friendly, industrious little fellow. (Oh yes, as the adoptive parent you get to name your Chipmunk.)

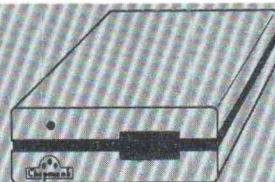


HOLMES
amtek | computer
products

EXCLUSIVE MARKETERS
PORTABLE COMPUTER
SUPPORT GROUP

SPECIFICATIONS

HEIGHT: 2 inches
WIDTH: 5½ inches
DEPTH: 7½ inches
WEIGHT: 2½ pounds
CASE: ABS plastic



COMPUTERS: TRS-80® Model 100 (Olivetti® M10 ver. available soon);
INTERFACE: Parallel via expansion bus with EZ-Snap ribbon cable connectors;
TRANSFER: 10 Kilobytes/second effective speed, 150,000 Baud actual rate;
DISK MEDIA: 3.5" SSDD 80-track micro floppy diskettes, 358.5K formatted;
POWER: Internal, rechargeable NiCad batteries or AC charger/adaptor;
BATT. LIFE: 2+ hrs. constant disk I/O, more than 10-12 hrs. in normal use;
DOS LOAD: CDOS loads from Chipmunk ROM w/o cassette or program;
FEATURES: Familiar menu displays with multiple "folders" for storing up to 239 files and/or folders per disk. Enhanced function keys and familiar use of arrow keys make CDOS easy to learn and use. "Save All", "Load All", "Name", "Kill" with function keys plus date flagging of disk files and on-screen "Help" program.
PRICE: \$599 plus \$10 S/H, complete with adaptor module, cable, System Disk, AC charger/adaptor and manual.

11035 HARRY HINES BLVD. No. 207, DALLAS, TEXAS 75229

PCSG provides hotline software support for Model 100. Call 1-214-351-0564. Available now directly from Portable Computer Support Group. We endeavor to continue as The Leader in Software for the Model 100.

THE FIRST OF TWO SHOTS

An editor gets two chances for fatuous self-indulgence. One when he begins a new assignment. And again when he's given his last word before being hung from the masthead (most likely with a rope of his own mutinous making). This, then, is my first.

I come to this post via a circuitous (some would proffer a short-circuited or not nearly long enough) route. Newspapers, magazines, radio, television — all on newsside. Industrial and tourism marketing. Back to magazines, first in ad sales, then as group publisher. Now, editorial director for a group begun by longtime friend and associate, Jim Povec. Editing is probably my life's true love.

Both of my predecessors were true aficionados of not only the Model 100, but the whole TRS-80 family, including cousins. I, on the other hand, am an ex-cub reporter for a smalltown daily; auspiciously starting my career in journalism because I lacked the mechanical aptitude to do anything really useful on a newspaper. This fact followed me right into broadcasting, too.

Acquaintances guffawed at the sight of me approaching, left arm longer by inches than the right due to the ancient Underwood manual typewriter hanging like an appendage at the end of my arm. It was my idea of "portable." I swore I would never use anything as new-fangled as an electric typewriter. For one thing it would be too heavy to carry in one hand. For another, if it broke, it was too valuable to just throw away like the Underwoods or the Royals that could be picked up in second-hand shops for 10, maybe 15 bucks.

WELCOME TO THE 20TH CENTURY. But I've made the leap in one short decade. Everything I know about the Model 100, I learned from Kerry Leichtman. He taught it to me in 10 minutes — but that was only because I continue to be a slow learner. As I suspect it is for many users, the 100 is for me a most marvelous little portable typewriter. That's precisely how I have used it to date, along with an address file. Even as a little word processor, the value of

the 100 has far exceeded its purchase price — though it was bought at high full-retail long before the price slashing began. I can say that two things changed my life: a half-semester of typing with Miss Richmond in 1961 and the Model 100 in 1984. Hours spent in boredom on airplanes have become productive. A desktop strewn with debris has become — well — less strewn.

"Sometimes the job of editor is like being the conductor of a motley and unruly orchestra comprised of talented musicians, each of whom insists on playing his own music at his own tempo."

And the power to do my own work more or less competently no longer resides with an overworked/underpaid secretary, but safely within the ROM of my 100. Now, I suspect that I'll be learning a lot more about what I can do with my 100 and Tandy 200, as well.

If there's a good side to my dirth of technical knowledge, it's that it all amazes me so. My "Golly Gee, Mr. Wizard!" wonderment will probably creep onto the pages with nauseous regularity. Likewise, it will keep me sensitive to computerese. Portable 100/200 will use plain English — whatever that is — whenever possible, rather than jargon, and will amplify a point even when it's boringly self-evident to hackers.

You'll notice, along with the name change this month, a redesign of the cover and the inside. It's a metamorphosis that will take several issues before we achieve what we're after: a contemporary feel and look, and greater readability. Art directors are wont to throw themselves in front of freight trains at the thought that lofty design ideals don't much matter. But

the truth of it is that if the content doesn't merit the reader's time and attention, the design quality won't carry the day.

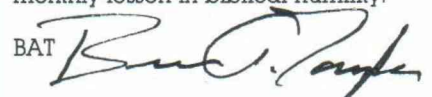
Portable 100 has led a merit-filled life from its first issues with Kerry Leichtman at the command keyboard, and then John Mello — both fine journalists who loved the 100 and made this magazine a lively, meaty journal. Their ghosts, I'm convinced, are hiding out in the hard disk of this Model 2000 watching me. So, substance and technical merit are still the object of this magazine.

LAPSING PHILOSOPHICAL. Two mandates will continue to guide Portable 100/200's editorial content: first, "there's more damn stuff you can do with this little machine than you can shake a stick at, and it's our job to tell that story." (That's about as close to a statement of publishing philosophy as you're apt to get around here.)

And, second, no one idea dominates this magazine. Recently, I had occasion to answer a reader's quarrel with Peter Stanwyck, over his December End User column (see Mail this issue), this way: "Sometimes the job of editor is like being the conductor of a motley and unruly orchestra comprised of talented musicians, each of whom insists on playing his own music at his own tempo. Even with the ensuing racket, I believe a magazine is at its best when it provides a forum for disparate points of view and engenders reader involvement. Sometimes the peace is kept tenuously at best" ... and sometimes not at all.

The conceit of the editor is that he can take the tradition of the past and place his personal stamp upon it, thereby improving it. I am no exception, but I trust that you will teach me a monthly lesson in biblical humility.

BAT



BARGAIN PROGRAMS

SMALLTALK

- Transfer files to and from your Commodore 64 or your IBM PC using a null modem cable (not included)

\$19.95

LAPWARMER GAMES

- Six game series
- Number Challenge Deflection
- Memory Challenge Repeater
- Biorhythm Who Buys??

\$19.95

DIALTALK

- Transfer files to and from your IBM PC remotely using the telephone lines
- IBM operates unattended after startup
- Access controlled by your secret user ID and password
- Optional event logging with reporting capabilities
- Optional echoing to screen or printer
- Support for either smart or dumb modems (not included)

\$29.95

_____ SMALLTALK Check one
\$19.95 each Check one

_____ DIALTALK Check one
\$29.95 each Check one

_____ LAPWARMER GAME SERIES
\$19.95 each

_____ IBM PC
_____ M100

_____ M100

_____ Commodore 64
_____ PC-8201A

_____ PC-8201A

\$ _____ , _____ Total Purchased

\$ _____ . _____ Ct. Residents add 7½% sales tax

\$3.00 x Number of purchases = \$ _____ . _____ Handling Charges

\$ _____ . _____ Total

NAME _____

ADDRESS _____

PAYMENT METHOD _____ CHECK _____ VISA _____ MASTERCARD

CARD NUMBER _____ EXP DATE _____

SIGNATURE _____ DATE _____

MAIL TO: Key Solutions, Inc.
19 Silvermine Road
New Canaan, CT 06840

MAIL ORDERS ONLY

WINTER CES: MUSIC, VIDEO COMPUTERS, GADGETS — AND THE ALL NEW 1985 TROJAN HORSE!



BY MIKE GREENLY

Winter Computer and Electronics Show (CES) seemed less garish this year. I don't think it's only because I'm getting used to it: this show really did convey more solid innovation, more interesting glimpses of a fast-arriving future, than any other CES I've been to.

Fewer actors were dressed as martians and giant fuzzballs and more up-front display of wonderful product seemed to me to set the tone this year. Sure, there were gimmicks and gadgets, both as props and products — lights inside of hoses you can cut with scissors, miniature hand-held vacuum cleaners, tin can robots with impractical, token serving trays, telephones shaped like swollen lips, etc., etc.

And there was the usual selection of empty scripts and visuals that did little more than display cute models. I always make a point of visiting Canon's booth, for example. For consistent, forced foolishness they cannot be beat. Sample:

Canon Lady #1: "(Gadget A) and (Gadget B) go together like me and Tom Jones."

Canon Lady #2: "Oh? I didn't know you go with Tom Jones!"

Canon Lady #1: "Yes. Get me together with Tom Jones, and I'm gone!" (music up)

Pretty wonderful, right? Well, maybe you had to be there. Nonetheless this show flowed over with genuine innovation, and the tangible experience of technology altering life's flavor.

THE VISUAL SOCIETY. Video is getting more and more spectacular. Digital TV for

with lightweight cam-corders, like Panasonic's, in video formats that we're already used to. These improvements are helping create the most visual society in history.

The significance of the rapid video growth curve isn't just "entertainment." One of the most interesting exhibits at CES was Matsushita's: a display of the home of the future. Video capability was shown as an intrinsic part of everyday living:

— a video doorbell, that takes a snapshot of every caller (even at night!) gives you a photo record of every visitor, with notation of time and date.

— a video writing tablet to grab a digitized picture from your television that you can draw/write/edit over it. No technical "decoders" to scare a simple consumer; just "write over" or alter your own home movie!

— a small, 4-color video camera you can hook onto your digital TV. Take a snapshot of the screen whenever you want. (Like that adorable video of little Hectorina setting the dog on fire. Now you can send a photo of your favorite frame to the ASPCA.)

AND FOR AUDIOPHILES. We'll be further seduced into various media as stereo sound joins video in 1985. To hear how "Star Wars" can sound in your home (if you want it to, that is).

The luscious Pioneer demonstration doesn't stop at CD stereo; their total home entertainment system has an option to turn your home into a "first run" theater. Why sound like merely the local multiplex moviehouse when you

The five best books for the TRS-80® Model 100, from *The Waite Group*

About the Waite Group's first series, covering the IBM® PC, *The Los Angeles Times* said, "They make up nothing less than a course of study that will take the novice by the hand and make of him or her an expert."

And now, the world's foremost authors of bestselling computer books have concentrated their considerable talents on your TRS-80® Model 100. From "power on" to advanced programming, each book is a thorough, in-depth resource. Select an area of special interest or assemble a complete library. And pick the brains of the experts who've picked the brain of your remarkable Model 100.

INTRODUCING THE TRS-80® MODEL 100 By Diane Burns and S. Venit. In one book, everything you need to know to use the machine and take advantage of its power and portability.

MASTERING BASIC ON THE TRS-80® MODEL 100 By Bernd Enders. The perfect guide to the Model 100's powerful BASIC language, from the beginning concepts to its most advanced levels.

PRACTICAL FINANCE ON THE TRS-80® MODEL 100 By S. Venit and Diane Burns. A comprehensive collection of useful programs for the mobile businessperson, real estate broker or investment analyst. Plus telecommunications for instant access to financial data.

GAMES AND UTILITIES FOR THE TRS-80® MODEL 100 By Ron Karr, Steven Olsen and Robert Lafore. Alphabetize names, improve your typing, play games, manage text files—fun and useful programs to do all this and more.

HIDDEN POWERS OF THE TRS-80® MODEL 100 By Christopher L. Morgan. High-performance computing for the serious programmer. This volume delves into the machine's internal workings, and even covers some topics not mentioned in the Model 100's manuals.

New American Library
P.O. Box 999, Bergenfield, NJ 07621

PO185

Please send me:

- _____ copies of INTRODUCING THE MODEL 100 (Z5574) \$15.95
- _____ copies of MASTERING BASIC (Z5575) \$19.95
- _____ copies of PRACTICAL FINANCE (Z5576) \$15.95
- _____ copies of GAMES AND UTILITIES (Z5577) \$16.95
- _____ copies of HIDDEN POWERS (Z5578) \$19.95

I enclose ☐ check
☐ money order (no
COD's or cash), or charge
☐ Visa ☐ MasterCard,
plus \$1.50 postage and
handling per order.

Allow up to 4 weeks for delivery.
This offer, prices and numbers
are subject to change without notice.
Offer expires June 30, 1985.

CARD # _____ EXP. DATE _____
SIGNATURE _____
NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____



PLUME/WAITE

NEW AMERICAN LIBRARY **NAL**

can sound like a Broadway Palace instead?

And what are the unforeseen applications in our society when — someday — people send fantastic quality (digitized) video plus audio to each other over the telephone? To walk the CES aisles and mull over questions like these is to be awed at how little we yet realize about life in the "Third Wave" and how it will feel.

THE INVISIBLE COMPUTER? The steps we'll take forward in 1985 bring us closer to "ripeness" for Microsoft's MSX vision.

Many people don't agree with me. One software publisher said to me disparagingly, "how many of us have you really seen at the MSX booth? They're not getting any take." Well it's accurate, from what I can tell, that typical "computer people" remain unimpressed with Microsoft. "It's just an 8-bit system," they say.

In my view, they're unimpressed because they're judging with only "computer vision." If you already know what computers can do for you, if you already love to whiz through spread-

sheets at 90 miles an hour, then maybe MSX isn't for you.

But if you're just a regular person — and there are a lot of us — if you'd enjoy really seeing Sue Ellen's freckles when J.R. unzips her blouse on Dallas...

If you'd like your mind tickled by the pure crystal keyboard of George Winston's piano in CD...

If you'd like the convenience of the Matsushita Home Control Center — with curtains that open and close when you're on vacation, with intercom linking one room to another, with an answering machine that can tell you all kinds of things when you phone home...

THEN you're a likely candidate to welcome the Trojan Horse of MSX right into your home. You hardly have to know it's a computer. You hardly have to know about its NAPLPS compability, about the fact that it may ultimately link you into yet unborn information networks of all kinds.

<For those that missed what this is all about MSX is a joint venture among 14 major Japanese manufacturers, one American manufacturer, Spectrevideo, and software system developer Microsoft (see your Model 100 menu) to develop and market a low-end standardized computer primarily for the home market. The theory is that the bottom-end market — under \$200, say — is so unattractive from a profit margin standpoint that the only way money can be made in it is if there is a true standardization of hardware and software. It's been much ballyhooed for some time now, and many observers believe that although the idea had merit, its time may have come and gone. Part of what buoyed it recently were reports of how well it has been doing in the Japanese market. However, recent analysis citations may gain-say that. — Ed.>

It will take the Japanese a long time, perhaps, to figure out the U.S. market.

They've been trying and failing for years to get Americans to sing Karaoke at parties, our own live vocals over pre-recorded music, as they do in Japanese bars. (If they made a waterproof version for singing in the shower they might have something at last.)

They've not been so adept at entering our lives through "productivity tools" but Lawsie, Lawsie, they DO know from pictures and sound!

Underestimate them at the risk of your own embarrassment later.

MEANWHILE BACK AT THE WAR. One show-stopper and one also-ran caused the most comment.

NEW CUSTOM SOFTWARE for your MODEL 100 or NEC PC 8201A

CBUG

CBUG is the ultimate debugging utility for your lap computer. Requires less than 3K RAM. 100% machine language. Features include:

- Instruction Step
- Call/Instruction Step
- Zero/Fill Memory
- Load Data
- Alter Registers
- Dump Memory & Registers
- Search/Replace
- HEX math (+ & -)
- Decimal — HEX conversions
- Display in HEX or ASCII

\$29.95

RENUMBER

The utility you've been waiting for! Now you can renumber your BASIC programs IN PLACE! This powerful, 100% machine language program is relocatable to any convenient place in memory. Requires less than 3K RAM. Renumber all or part of a program. You specify line numbers and increment.

\$24.95

LET'S PLAY MONOPOLY*

It's you against the computer and the computer is a tough competitor. Super fast machine language graphics display the whole board at all times. The computer makes all its own decisions. You're really going to love this game.

\$29.95

ASSEMBLER

A powerful 8085 assembler for your lap computer. Recognizes all the standard pseud-ops. Immediate data may be in decimal, hex or ASCII. Relocatable to any convenient place in memory. Several built-in Macros make your programming easier. FAST! Written in 100% machine language and requires less than 3K RAM.

\$32.95

MELODY MAKER

A musical program generator. Use simple cursor controls to enter sheet music. Melody Maker writes a program to play the song. You can even use Melody Maker to add musical routines to your own programs.

\$19.95

CUSTOM SOFTWARE
• 1308 Western • Wellington, Kansas 67152 •
316/326-6197



Please include \$1.00 for shipping. For orders outside the U.S., include sufficient postage for airmail delivery. U.S. funds only.



*Monopoly is a trademark of Parker Brothers

CES; VEGAS

In the non-MSX computer arena, it's obvious to all the ATARI stole the show. Whether Jack Tramiel can deliver or not is an open question, but my money is on him.

When he or his Software Honcho Sig Hartmann are questioned about Commodore's already fabled Amiga machine — another Macintosh Color Clone — the cautious ATARI reply is that there's plenty of room for everybody, and ATARI exists only to serve today's public.

Um-hmmmm. But don't you imagine it's been very satisfying for Tramiel and his team to have the so-called "Jackintosh" low-cost clone of Apple's Mac be the show-stopper, while what was trumpeted as "another breakthrough from Commodore" prompted a "So what?" from most show observers?

Commodore's 128K machine will probably be a sales success, but it's no harbinger of the future. And I can't believe their lap computer with the Ticky Toy Keyboard will become the portable of choice for many serious users, no matter how much better Commodore's LCD screen contrast and resolution genuinely is.

The June CES may see a rebound from Commodore, but this show will go down in industry history as the moment Jack Tramiel brought Atari back to center stage.

Personally, I'm going to find observing this struggle — with the parallel battles between Apple, IBM, and maybe (voice off stage) AT&T — as exciting and gripping as any television soap opera. When CBS is ready to write the pilot script for "JACK'S LANDING," I hope they'll give me a call!

IS THERE LIFE AFTER CES? No wonder consumer electronics is a \$25 billion business — there are so many enticing ways that electronic technology is enriching our experience.

As displayed at this CES:

— Get your B.A. or M.B.A. fully accredited college degree via Tele-learning, "the world's first Electronic University" through a variety of "interactive seminars" and courses from wherever you live.

— Sample software at home with a system like Masterline, the test market product with 20 downloadable software samples a month available by subscription.

— Turn your car into a stupendous Music Machine with telephone connections to the rest of the world at all times, and;

— The combination of digital, video, audio, computers, and portability has barely, barely begun!

I'm already drooling over what progress we may see at the next big CES show this June in Chicago.

Will I be there? Either me or my hologram will — you betcha!

Mike Greenly is a self-confessed pioneer in "interactive electronic journalism." Former Portable 100 editor John Mello accused Mike of rekindling his "wonder" at the technology when John's enthusiasm flagged. Mike's reportage is available on Parti on the

Source via his Model 100. A former product manager at Lever Brothers, he went on to become the youngest vice president in the history of Avon Products. Now he is president of Mike Greenly Marketing, a consulting firm in New York City. You doubtless will be seeing much more of Mike's work on these pages in the future. We figure we should be helping to support interactive electronic journalism via the Model 100 — at least until we find out just what it means. — Ed. □

COMET WATCHERS – NAVIGATORS

DA 01/04/1986
UT 23:12:16
LA 42°50.6'N
LO 070°20.8'W
FV 060° MA 9.0
ID Halley
AZ 238°09.4'
AL 25°14.5'

HALLEY ■
VEGA
JUPITER

Spot Halley's Comet among the stars, planets, Moon, and Sun, displayed just as you see the sky, at any time, from any place. Point out any of 180 celestial bodies with the cursor. ASTRO shows name, brightness, direction, and altitude. Manual and cassette for 24K TRS-80/100. \$39.95 + \$2.00 S/H, Visa, M/C. Loquor Enterprises, 3 Heneage Lane, Hanover, NH 03755
ASTRO – A PLANETARIUM IN YOUR LAP

29 ON READER SERVICE CARD

400 FREE PROGRAMS!

Spreadsheets, printing, formatters, diaries, programming, utilities and more.

All available on CompuServe's

Model 100 Special Interest Group

Just log on to CompuServe and **GO PCS-154** at the (!) prompt.

Take advantage of this freeware today.

Introducing **SUPERA** and **TEX PRO**...

More Revolutionary Software from Micro Demon

SUPERA - Beyond PRO AID

SUPERA is a revolutionary concept in Model 100 software. Like PRO AID, SUPERA adds many new features to the Model 100 operating system, making your computer far more powerful. Unlike PRO AID, or any other machine language program, SUPERA loads and behaves like a BASIC program! Because of its unique format, you will not have to worry about memory conflicts between SUPERA and other machine language programs.

Essentially, SUPERA gives you all the features of TEX PRO and almost all those of PRO AID, and more, in a remarkably easy to use format. While in use, SUPERA must remain in the computer as a Basic file, and it must be the first Basic program loaded from cassette. But otherwise you can forget about it. SUPERA will constantly work in the background providing your Model 100 with numerous features otherwise not available. In addition to the TEXT and BASIC enhancements provided by PRO AID and TEX PRO, SUPERA also allows you to kill and rename files by control keys while at the main menu. Only a few of the lesser used features of PRO AID are missing from SUPERA. Registered PRO AID owners can purchase SUPERA at a reduced rate.

ASM - A Powerful 8085 Assembler

Only 3.6K bytes long, ASM is both compact and fast. In fact ASM can assemble a 14K source file version of itself in about 20 seconds. Input and output data can be either decimal or hex. Constants can be in either decimal, hex or binary. Output is automatically routed to the printer if the printer is connected and on.

ASM supports +, -, *, /, exponents, MOD, AND, OR, NOT, and the use of parenthesis in the data field.

While not a macro assembler, ASM contains a built-in library of useful macros which you can immediately add to your programs. Among these are a collection of relative branch instructions that make it possible to write relocatable routines for use with a BASIC program.

ASM checks for most common errors, and if one is detected, it displays the offending line with the error in inverse video.

As an end of assembly option, ASM will provide a table of addresses for all symbolic labels. This table includes the number of references to each label. ASM comes with full documentation, and a listing of useful ROM routines.

TEL PRO - A Telcom Enhancement

TEL PRO adds a whole new dimension to the TELCOM program. If you enter TELCOM via TEL PRO, you will discover a variety of new capabilities open to you. Without losing your connection, you can kill files, access the menu, check the time, perform BASIC calculations, upload BASIC programs, set alarms, access help screens, append data from the display to text files, read text files, and more.

TEX PRO - Give Your Model 100 a Real TEXT Editor

TEX PRO enhances the text editing capabilities of the Model 100 in much the same way that TEL PRO enhances TELCOM. When you enter TEXT after running TEX PRO, you will discover that TEXT suddenly has several new features.

- * You can turn on a 'type over mode' in which typed characters will replace the current text instead of being inserted.
- * The F4 key will activate a powerful, multi-featured search and replace function.
- * You can change the case of the character under the cursor by a control key.
- * You can delete a word or line by pressing the appropriate control keys.
- * The same 26-function key capability as PRO AID except that the keys can define longer strings (up to 28 characters)
- * And More!

TEX PRO is an intelligent program that will turn itself off as soon as you exit the Model 100 TEXT mode, and thus will avoid conflicting with other machine language programs you may be using.

PRO AID - Background Power

PRO AID is a machine language program that adds many powerful features to your Model 100. You get 26 new, easy to define, super function keys that can be used in TEXT and TELCOM as well as BASIC. You also get automatic line numbers, instantaneous deletion of any range of BASIC lines, a special calculator mode with new BASIC commands, immediate access to MENU programs, a program status key, and much more. PRO AID uses less than 1.8K of your memory, and can be located anywhere there is room. PRO AID comes with complete documentation.

DASM - Far Beyond a Mere Disassembler

DASM is for the serious ROM investigator. DASM does much more than simply disassemble the machine code inside your Model 100. It provides function key controls to easily follow the logical flow of the code, to access the contents of specific locations, to check the keywords corresponding to BASIC tokens, and more. DASM allows for input/output to be in either hex or decimal. You can interrogate any range of memory, and then return to the disassembly.

DASM also contains a remarkable split-screen effect that makes it possible to view the previous 8 lines of the disassembly.

Send mail orders and requests for information to Micro Demon, Inc., P.O. Box 50162, Columbia, SC 29250. Visa and Mastercard are welcome. Or, call our 24 hour order line, 803-733-0980.

Name _____
Address _____
City _____ State _____
Signature _____ Zip _____
Card Number _____ Exp. Date _____

**MICRO
DEMON, INC.**

P.O. Box 50162

Quantity	Product & Price	Total Price
	Pro Aid (\$39.95)	
	ASM (\$69.95)	
	Tel Pro (\$49.95)	
	DASM (\$29.95)	
	Tex Pro (\$49.95)	
	Supera (\$79.95)*	

* \$49.95 for Pro Aid owners

Paying by:

<input type="checkbox"/> Visa	Total Cost of Items: (SC Residents Add 5%)	
<input type="checkbox"/> MasterCard	Shipping & Handling (Overseas is Extra)	\$1.50
<input type="checkbox"/> Check	Total Amount Due:	

LOST IN THE MARGIN

When I purchased my Model 100 one of the things I thought it'd be useful for would be to key in a letter from the office. I'd then take the unit home and print it out.

My first surprise was when I went to print it each line printed on top of the other. This problem was rectified by changing one of the dip switches on the Silver Reed.

I purchased this printer without a tractor feed; I later added one. This caused me problems when I used the shift print within the Text program. My paper couldn't be moved far enough to the left and the letter would print too far to the left on the paper. It was so bad that the first two leading characters of each line were to the left of the perforation.

This left me in a bind. Taking the challenge I decided to write a Basic program to read the text file and, by using the Tab feature of Basic, shift everything to the right as I printed it. After I got this working, I decided to add a few features to the program. The program works as follows:

1. Input the file to print.
2. Enter the options:
 - a. left margin
 - b. width of the letter (up to 80 characters)
 - c. single or double space (small s is single, anything else is double)
 - d. number of lines on a page before a page break
 - e. number of lines to skip on a page break
3. Enter 1st line of who the letter is to.
4. Enter 2nd line of who the letter is to.
5. Enter 3rd line of who the letter is to.

Note: If the enter key is hit when the question "to-1" appears, it's assumed that this is a personal letter and (a) the other of these questions won't appear and (b) a comma will print after Dear ? . If an entry is made for "to-1", then one will be needed for "to-2", and "to-3". A business letter is then assumed and a colon will appear after Dear ?.

6. Enter month and day to appear in letter.
7. Enter year to appear in letter.
8. Enter the name to appear after "Dear".
9. Enter who the letter is from.

The version for the program (see listing) submitted has been tailored for

listing one

```

3  CLEAR500:DEFINTK,J,W,M,L:DEFSTRB,P,F,C,X,T
5  DIMP(80),BU(15):CO="":T1="Z":LN=0:B+"":GOSUB286
35  FORJ=KTOW:X=INPUT$(1,1):IFEOF(1)THEN200
54  IFX=CHR$(13)THENX=B
55  P(J)=X:NEXT:IFP(W)=BTHEN72
68  X=INPUT$(1,1):IFX<>BTHEN100
72  FORKK=1TOW:PR=PR+P(KK):NEXT:GOSUB240:K=1:GOTO35
100 BU(1)=X:M2=2:FORM=WTOLSTEP-1:IFP(M)=BTHEN130
108 BU(M2)=P(M):M2+1:NEXT
130 M2=M2-1:J1=W-M2+1
132 FORJ2=WTOLSTEP-1:P(J2)=B:NEXT
140 FORKK=1TOJ1:PR=PR+P(KK):NEXT
146 GOSUB240:J1=1:FORJ2=M2TOLSTEP-1
152 P(J1)=BU(J2):J1=J1+1:NEXT:K=M2+1:GOTO35
200 FORKK=1TOJ-1:PR=PR+P(KK):NEXT:GOSUB240:GOTO290
240 LPRINTTAB(LM)PR:IFF1="s"THEN245
241 LPRINTB:LL=LL+1
245 PR=B:LL=LL+1:IFFLL>LPTHEN280
252 RETURN
254 INPUT"to-1";T1:IFT1="Z"THEN258
255 INPUT"to-2";T2:INPUT"to-3";T3
258 IFT1="Z"THENCO=","
260 INPUT"month & day";X:INPUT"year";P:X=X+","+P
261 KK=W-10:INPUT"dear & from";T,FR:LPRINTTAB(KK)X:GOSUB281
262 LPRINTB:LPRINTTAB(LM)"Dear ";T;CO:LPRINTB:RETURN
280 FORJ3=1TOLB:LPRINTB:NEXT:LL=LL+4:GOTO252
281 IFT1="Z"THEN285
282 LPRINTTAB(LM)T1:LN=3
284 LPRINTTAB(LM)T2:LPRINTTAB(LM)T3
285 RETURN
286 INPUT"print file";F:PR=B:INPUT"options";LM,W,F1,LP,LB
287 GOSUB254:OPENFFORINPUTAS1:K=1:RETURN
290 K=W-
10:LPRINTTAB(K)"Sincerely,":LPRINTB:LPRINTB:LPRINTTAB(K)FR:END
    
```


speed and memory saving and not for readability.

Robert Sterling
Jenkintown, PA

NOT ENOUGH SUPPORT

I am employed by the National Institutes of Health in the capacity of a computer consultant. Recently I was asked to find, and then evaluate, hardware for gathering behavioral scoring data. I thought the new portable com-

puters on the market would be able to tackle the job with flexibility. Due to Tandy's ability to service and stand behind its hardware, I chose the Model 100 over the NEC and other portables.

While evaluating this product, I've encountered some hurdles. The biggest one is Tandy. According to one of its technical support people, I should "feel free to disassemble the ROM." All other attempts at getting software technical information have been thwarted by similar remarks.

However, the amount of software

published by Tandy is limited to 12 pages in the hardware technical manual, and is practically a reproduction of the 12 pages in Radio Shack's 700 Series manual. I was frustrated.

So, I searched the market for third-party vendors. To my surprise, I found quite a bit of information, although most vendors were unwilling to part with their fruits of labor.

I did, however, stumble upon Carl Oppedahl's article in the August 1984 issue of *Portable 100*. There it was noted his book, *Advanced Programming for the Model 100*, would soon be published. From the little information I gleaned it seems the book will be one of the most complete technical descriptions of Model 100 software.

R. Hannes Beinert
Madison, WI

Inside the TRS-80 Model 100. will be available June 1985 by Weber Systems, Cleveland, OH. — Ed.

TANDY THANKS STANWYCK

This is a copy of a letter sent from Ed Juge, Tandy's director of market planning, to Portable 100/200 End User columnist, Peter Stanwyck.

I read your November column on Tandy with great interest. I think you hit the nail pretty much on the head when you described the way we at Tandy see ourselves.

We don't claim to build equipment aimed solely at the corporate marketplace as does IBM. Nor do we feel that we have to use the latest jazziest features, unless they make sense to accomplish our major purpose.

That purpose is to provide cost-effective solutions to problems that users face in their daily lives. I guess that pretty well qualifies us as the Chevys of the computer industry.

The article was certainly done in a fair and straight forward fashion. I wanted to personally thank you for a good job.

OTHERS DON'T THANK STANWYCK

While I wouldn't dare to challenge Peter Stanwyck in the poison pen arena, I do disagree with his reasoning regarding the 100's word processing capabilities. (See *End User*, *Portable 100*, December 1984, page 72.)

MAKE YOUR ENTIRE SYSTEM... PORTABLE



Around Town . . . or Around the World

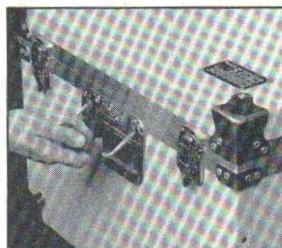
Now, take your *entire* computer system with you anywhere you go . . . completely protected . . . in a custom-designed case by Cabbage.

So light-weight, you can carry it with you like a briefcase. So rugged, you can ship your computer . . . plus, any combination of peripherals . . . safely and easily across country or around the world by commercial transport.

You Can Trust Cabbage Quality!

Over the last decade Cabbage has become widely recognized as one of the foremost manufacturers of custom-designed electronic, scientific, and audio-visual equipment cases in the world. Cabbage experience, quality, and craftsmanship is unsurpassed and unchallenged. We use only the finest, most durable materials and hardware, throughout. Each Cabbage Case is a custom-made, personalized piece of equipment . . . designed to satisfy your specific problems and needs. It is even exclusively serial numbered for your convenience and protection. You get all the extras . . . at no extra cost.

If it must arrive in perfect condition . . . protect it in a Cabbage Case.



Heavy-duty, nickel-plated steel hardware



Durable, high density foam interiors

**CABBAGE
CASES**

2458 Wood Avenue • Columbus, Ohio 43221
(614) 486-2495

"Nothing's Tougher . . . Than a Cabbage"

MAIL

I have both a desk top with WordStar and the 100 with a slightly modified Write+. My position is that the finished product should communicate legible facts and opinions to the reader. Mr. Stanwyck takes the view that his finished product must exactly match his taste in appearance.

The 100 accompanies me to technical meetings and business conferences. Notes taken hastily get reworked on the plane homeward, but the information gets printed that evening and is in the hands of the people who need it by the next day. A friend of mine uses Text Power 100 with his 100, preferring it to Write+. But both of us are satisfied with the work we can do quickly and easily with the 100. Maybe it ain't pretty, but it works.

A.W. Goldman
Newton, MA

Why is it whenever I read one of Peter Stanwyck's columns I feel as though the glass is half-empty instead of half-full? I enjoy criticism when it's constructive. But I didn't pay that extra dollar on the cover price to read about Stanwyck's ultimate goals on right justification.

Stick to the desk-top computers, Stanwyck, if you want to talk about ultimate goals. We're talking portable here, and I bought the 100 for that reason.

I use Scripsit from Portable Computer Support Group and think it's about as close as you're going to get to a desk-top word processor. If you want to call this getting by, that's fine with me. There are features I'll never use but they're there in case I need them.

Stanley E. Yedlowski
Virginia Beach, VA

IN THE BOUQUET

While reading the November issue of Portable 100, I came across the Editor's note, page 10, offering Briefcase Portable subscribers a subscription to Portable 100 at no cost.

Nice gesture, but also catching my eye was the fact your cover price increased a dollar and subscriptions increased to five dollars a year.

Perhaps the gentleman from Arkansas should be thanking the purchasers of Portable 100 rather than yourselves for we're obviously the purveyors of your act of generosity.

How about concentrating on serving your subscribers instead of patting yourself on the back and thusly broad-

ening the subscription base. You guys have an excellent magazine. Why jeopardize it with slipshod circulation.

Terry Loewenberg
Waterford, CT

There's no connection between the need for a price increase on Portable 100 and the fulfilling of paid subscriptions to Briefcase Portable, which ceased publication and whose names we acquired.

We appreciate your otherwise posi-

tive reaction to the magazine. Hopefully, the changes you see in coming months with Portable 100/200 are to your liking, and that you will see us fulfilling our end with a timely, high quality, and useful publication. — Ed.

In addition to letters from our readers, we also include in Mail 100/200 letters from CompuServe and The Source. Those message writers are identified by their CompuServe (CIS ID) and Source (STC ID) identification numbers. — Ed. □

PORTABLE EXPANSIONS

THE ORIGINAL

8K MEMORY MODULES

\$44.95

SET OF 3 FOR \$129

For your Model-100, NEC PC-8201, or Olivetti. We have shipped over 12,000 of these since Oct. '83. Field proven and fully supported. Completely factory tested for both function and low-power.

NEW TTXpress MODEL 1280 \$170

Portable Thermal Printer

Battery operated, 2.2 lbs., 8 1/2" wide paper, 40 cps, 80 or 60 chars./line, half the size of a Model 100. Uses a parallel port and works with (most) all computers. TTX printer cable for Model 100 or PC-8201 \$15

THINGS JUST FOR THE NEC PC-8201

SALE

SideCar 32K RAM cartridge \$199

(Expandable to 128K) Plugs into the side of the NEC PC-8201.

64K SideCar (2 banks) \$299, 96K SideCar (3 banks) \$399

128K SideCar (4 banks) \$499

PSCALC \$88

A spreadsheet program in a 32K ROM CHIP. Plugs into the ROM socket of the PC-8201 doubling the amount of built in program storage.

FREE SHIPPING, HANDLING, AND INSURANCE

for Cont. USA. Shipped UPS the next business day. 30 day total satisfaction money back guarantee. We take VISA/MC and American Express. Checks held 18 days.

 **PURPLE COMPUTING**

(800) 732-5012

(805) 987-4788 (in Calif.)

2068 VENTURA BLVD., CAMARILLO, CA 93010

John Baptist
322156 Sycamore Rd
Fort Worth, Texas 76114

Dear John,

I really did enjoy your visit. I think that we were both able to learn a great deal about the scouting movement here in Tarrant County.

What I would like to propose now is that we establish a cooperative arrangement so that both groups can benefit. Would you consider allowing our troops to use your ranch on a monthly or bi-monthly basis? We could, in turn, provide some assistance in improving your ranch thru conservation projects which would slow erosion. I would like to stress that in no way would your land be damaged thru our camping activities.

Sincerely,

John Hamilton

TANDY TRS-80

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

Radio Shack
TRS-80
80K/VIDEO
INTERFACE

TANDY
Radio Shack
ADVANCED
TECHNOLOGY
SERIES
...AND AFFORDABLE TOO

POWER READY/ALERT OFF LINE PAPER FEED
Radio Shack TRS-80 TRS 100

ADD DISK STORAGE, VIDEO AND A PRINTER TO YOUR MODEL 100.

Your Advanced Technology Model 100 puts the computer power and performance you need into a portable, four-pound package. But did you know that accessories from Radio Shack can help your Model 100 grow into a powerful desktop workstation and a complete portable computer system, too?

Get More from Your Model 100

Add our Disk/Video Interface to your Model 100 and your portable computer can become the heart of a sophisticated disk-based desktop system in an instant. The Model 100 with Disk/Video Interface (26-3806, \$799) saves you important time and makes accessing information much easier than with a cassette-based system. But, unlike other disk systems, the Model 100 retains its portability: Just download the latest sales information into your Model 100, disconnect from the interface and you're ready to go back on the road with the most up-to-date figures.

The Disk/Video Interface includes a built-in 5¹/₄" double-density floppy disk drive for more than 184,000 characters of storage. At that rate, disks for a small business' inventory, mailing list and personnel files could fill less room than an office dictionary! And with high-speed disk operation, there's never a need to sort through endless boxes of paper or filing cabinets full of records. Information is available at the touch of a key.

The Disk/Video Interface also lets you use your Model 100 with a standard video monitor or television set for a larger display. Used with your television, the Disk/Video Interface generates a 40-character by 25-line display, perfect for writing programs in the Model 100's BASIC computer language or jotting down quick memos. Used with a video monitor, the interface generates an 80-character by 25-line display, great for word processing and other office uses.

There's no new operating system to learn with the Disk/Video Interface, and no complicated commands to memorize. Just connect the Model 100 to the interface (we include the cable) and you're ready to begin. And the interface doesn't require use of the Model 100's standard connectors, so you still have room to expand with a printer, bar code reader, telecommunications device or other accessory.

A Printer You Can Take Anywhere

Our new TRP-100 printer is the perfect complement to your Model 100 portable workstation. With an advanced thermal ribbon printing system and a choice of battery or AC power, it's perfect for busy professionals who need clear, fast printouts wherever they are.

The TRP-100 (26-1275, \$299.95) prints text and bit-image graphics on full-size plain paper at 50 characters per second. But the TRP-100 is quiet, too, making it ideal for use during important business meetings. And at just 5¹/₂ pounds, you can carry the TRP-100 printer, along with your Model 100 computer, easily inside your briefcase.

See Them Today

Get a hands-on demonstration of the Disk/Video Interface and the TRP-100 Printer at your nearest Radio Shack Computer Center or participating Radio Shack store or dealer. And if you don't have your Model 100 yet, make sure to stop by and take advantage of our new low prices. The 8K Model 100 is just \$399 (26-3801, Was \$599.00 in Cat. RSC-12), and the 24K Model 100 is just \$599 (26-3802, Was \$799 in Cat. RSC-12).

Radio Shack®
The Technology Store™

A DIVISION OF TANDY CORPORATION

New! 1985 Computer Catalog. Send Me a Copy.

Mail To: Radio Shack, Dept. 85-A-344
300 One Tandy Center, Fort Worth, Texas 76102

Name

Address

City

State Zip

Telephone

Prices apply at Radio Shack Computer Centers and at participating Radio Shack stores and dealers.

45 ON READER SERVICE CARD

TELECOMMUTER™

INTEGRATED WORD PROCESSING & COMMUNICATIONS SOFTWARE

For the Tandy 2000, 1200 and 1000, and IBM-PC/XT and compatible computers. Uses the same commands as your Model 100!

IT'S SO SIMPLE

Use it in five minutes! All active commands are prompted on the screen. Write, edit and print letters, memos, papers, manuals, books . . . even computer programs. Insert and overstrike text entry modes. Easy text formatting and pagination.

Communications without pain. Automatic parameter setup, dialing, logon and answer. Supports 300 and 1200 bps modems. Shares address/telephone number file (ADRS.DO) with Model 100.

AND YET SO POWERFUL!

Fast File Transfer between desktop and portable computers over SIGEA Null Modem Cable at up to 9600 bps. Fully prompted on both computer screens.

Host Mode lets you control your desktop computer over standard telephone lines from another computer, such as your Model 100. Upload and download files, run programs, execute DOS commands from your remote keyboard.

Easy installation of program on hard disk. Editor offers adjustable text and decimal tabs, select save and append to disk files, select print and much more. Create, edit and print documents as large as your computer's disk storage allows.

Available in three versions:

Telecommuter™-Write-It! \$125 (Word Processing and File Transfer. Cable \$35.)

Telecommuter™-standard \$200 (Word Processing, Fast File Transfer, Telcom Communications and Host Mode. With Cable.)

Telecommuter™-plus \$300 (all of the standard product, plus XModem protocol, VT100 commands, secure dual password Host Mode, and DOS utilities within program.)

Call today to discuss your application with us. We accept VISA and MC, and we ship free in the US.

Look for Telecommuter at your local Radio Shack Computer Center!

SIGEA SYSTEMS, INC.

19 Pelham Road, Weston, MA 02193 (617) 647-1099

PLUG-IN ROM MAKES SPREADSHEETS A SNAP

With Lucid, the 100 becomes a master at integrated tricks; Lotus 1-2-3 and Multiplan have met their match.

By Carl Oppedahl

As recently as ten years ago, the only spreadsheet programs were on large mainframes; a custom program was written usually for each application.

The revolution began with VisiCalc, a program written originally for the Apple II and later made available for other micros. More recently Lotus 1-2-3, offered for the IBM PC, has dominated the market for spreadsheet software.

Spreadsheet programs written in Basic for the Model 100 appeared soon after the machine hit the market. Although slow and memory eaters, they had the virtue of being inexpensive.

Interestingly, at about the same time the 100 was released, a lap computer dedicated to spreadsheet use was announced. Called WorkSlate and priced several thousand dollars above the 100, it was to be used for number crunching and was a commercial failure. And more recently, the Hewlett Packard Model 110 with Lotus 1-2-3 built-in was announced. It lists for about \$3,000.

But the 100 with Lucid installed provides fine spreadsheet capabilities in a lap unit for a lot less. Both the computer and ROM can be bought for under \$1,000.

SNAP IN. Lucid arrives as an option ROM. Once plugged into the option ROM socket on the underside of the 100, the user calls one subroutine from Basic to put the Lucid filename on the menu. Removal is just as easy.

An 8K EPROM, Lucid is mounted on a sturdy fiberglass printed circuit board. The 100's circuitry allows a ROM as big as 32K to fit into the socket; Lucid ignores two of the address lines. It may be said, then, that with Lucid, 24K of the option ROM space goes unused.

EASY LEARNING. When I received the first preproduction copy of Lucid, I discovered that previous training on VisiCalc, coupled with general familiarity with the 100, made it easy to use Lucid without documentation. Fortunate since at that stage the documentation hadn't been written.

For example, like Text, Lucid may be selected from the main menu, at which time the user is prompted to type in a filename. If the file exists, it's opened. Otherwise, a new file is created. The filename can later be seen on the main menu with extension .CA.

Again like Text, Lucid can select the data file itself from the menu, in which case the file will be opened for processing by the appropriate program. In other words, you can move the cursor to the .CA file, press enter, and see the spreadsheet on the screen.

From Basic the .CA file can be renamed or killed, just as with .BA, .CO, and .DO files.

Within Lucid, the cursor keys do more or less what one would expect. Up, down, left, and right arrow keys move in the indicated direction the distance of one cell. Control-up goes to the top of the spreadsheet, while shifted arrow keys go to the four edges of the LCD screen. It's too bad, however, that control-down doesn't go to the end of the spreadsheet; control-left and control-right also don't work.

As with Text, Lucid presents file contents on the screen literally in a what you see is what you get fashion.

DOCUMENTATION. The 130-page manual does a good job not only of explaining Lucid but also of introducing the new user to spreadsheets generally. It's well written, has a good index, and is attractively typeset and printed.

There are only two small points I'd have to grumble about: There should be more prominent warning about the necessity of frequent backups. Also, the writing style occasionally gets carried away.

While pleasant and conversational, the manual seems a bit self-congratulatory. Sixty times, once for the top of each even-numbered page, one finds the heading: Lucid Exceptional Spreadsheet.

Superlatives pop up every twenty paragraphs or so, reflecting understandable enthusiasm on the part of the authors. But one learns that delete

row or column is an excellent function and four pages later is swept away with the happy knowledge that "Lucid has a wonderful print function . . ."

BELLS AND WHISTLES. Lucid does lots of nice things that go beyond the usual spreadsheet program. Particularly, cells in one .CA file may contain references to the contents of selected cells in another .CA file in RAM.

Spreadsheet users are accustomed to a function allowing the sheet to select a value from a certain row and column of a chart, based on numerical values elsewhere in the chart.

Lucid does this with the table (TBL) function. Because the table contents may be filled in as formulas instead of mere values, it's very powerful.

The manual gives examples of charming guess-the-capitol-of-each-state sorts of input and output, illustrating the versatility of TBL.

Cells may be protected. A handy feature, this lets the sophisticated user prepare a spreadsheet and protect all but a few cells. Others may then fill in the varying program inputs, and print out the results, without the usual danger of overwriting one or more formulas.

Many transcendental functions, such as sin and log, are provided.

REPLICATION. Spreadsheet users are familiar with the idea of replication—that a formula typed in for a cell or group of cells may be appropriate for other cells, rows, or columns.

Replication demands more than literal copying. Suppose the formula in one cell (call it the source cell), refers to the cell on its left. If that formula is to be replicated elsewhere (the target cell), the intended result is often the formula reference at the target cell should be to the cell at its left, rather than to the cell at the left of the source cell. The former is called relative replication; the latter is absolute replication. VisiCalc's replication process asks item-by-item whether each reference is relative or absolute.

Lucid, on the other hand, assumes each cell reference in a formula to be

relative unless it's flagged with a dollar sign. The replication itself is accomplished with the familiar Sel, Cut, Copy, and Paste keys.

RECALCULATION. With Lucid, recalculation is always manual. One pushes F2. Since I was raised on VisiCalc, which allows manual or automatic recalculation, I found myself wishing I could switch Lucid to and from a mode of automatic recalculation.

Experience has taught me this. More than once I've printed a spreadsheet only to discover later the page was filled with incorrect numbers, all because I'd changed a single value and forgotten to push the function key for recalculation.

DVI. Lucid is compatible with Radio Shack's Disk/Video Interface in so far as its presense in the 100 doesn't interfere with using the DVI.

The Lucid display on the LCD screen is limited to six rows and a nominal four columns, depending on column widths. There's no way to get the Lucid display onto the DVI screen. Also, Lucid data files with extension .CA can't be put on disk.

I was told, however, that a utility may someday be provided by Portable Computer Support Group (PCSG) to allow transfers to and from disk. Owners of the DVI should call them for information.

OTHER PROGRAMS. Lucid stores its data in files with the extension .CA. Such files can't be opened from Basic, and so may be manipulated only through Peek and Poke... risky business. A Lucid .CA file can't receive information from any source other than the keyboard, and in particular can't take a data interchange format (DIF) file as input.

Lucid output is more versatile. The information destined for the printer may be sent instead to a .DO file. The user later may use Text to cut and paste the material into other documents. DIF output isn't supported. (PCSG says a utility

"Lucid... files can't be opened from Basic, and so may be manipulated only through Peek and Poke... risky business."

module later may be released to handle DIF input and output.)

BASIC SPREADSHEETS. Several Basic spreadsheet programs have been written for the 100. MINIVC, available for the cost of a download from the CompuServe Model 100 Sig, does a good job. You can't beat the price.

But a Basic spreadsheet program uses lots of RAM, both for the program and for the data file. Empty cells often take up as much space as cells with numerical values. It's easy to run out of memory with a sheet of just a few dozen cells.

Recalculation can take a long time — many tens of seconds for a sheet of any size. Compared with Basic, machine language is faster and more economical in its use of RAM.

Radio Shack has rereleased Spectaculator for the 100: (26-3828, \$49.95), a Color Computer favorite. Written in machine language, it's fast. But it's a far cry from Lucid or any Basic spreadsheet program in versatility. For example, one can't enter a formula for each cell. Only an entire row or column may have a formula.

"Lucid represents considerable value above the other spreadsheet choices for the Model 100."

And the Spectaculator program, though smaller and faster than its Basic equivalent, still consumes RAM. Depending on how it's used, it may occupy RAM twice — once in the .CO file and once between HIMEM and MAXRAM.

LEAN, FAST. Lucid, however, consumes no RAM for the program. It resides in option ROM space. Its use of RAM for data files is efficient. It's fast — faster than Basic — and, according to the advertisements, faster than Lotus 1-2-3. For these reasons, Lucid represents considerable value above the other spreadsheet choices for the Model 100.

DESKTOP COMPETITION. Most people do spreadsheet calculations on desktop machines like the Apple and IBM PC. Such machines have a much larger screen size than the 100, and offer the handy storage of disk drives.

But they also cost a lot more and don't calculate faster than Lucid. The 100 is conveniently portable, something that can't be said about any of the office desktops.

You may find Lucid and a Model 100

will do everything you need in a spreadsheet and at a far lower cost.

"... desktop machines... cost a lot more (than a 100) and don't calculate faster than Lucid."

CUSTOMER SUPPORT. It bodes well for the user that the PCSG phone number appears on each page of the pocket reference card, and on the front page of the manual. In anonymous calls to the number I found the support personnel to be knowledgeable and courteous.

BUGS. If you don't make frequent backups of your files, you'll suffer if your 100 undergoes a cold start, going back to January 1, 1900. Early versions of Lucid had bugs occasionally cold-starting the machine.

I've had no problem, however, with the current version 1.3. But users with the earlier versions 1.0, 1.1, and 1.2 should return them to PCSG for updating.

COMPATIBILITY. Most Model 100 machine language programs reside in high RAM (between HIMEM and MAXRAM) and often cause compatibility problems. When the loading areas for two such files overlap, they can't be used simultaneously, except by reassembling or relocating one of the two.

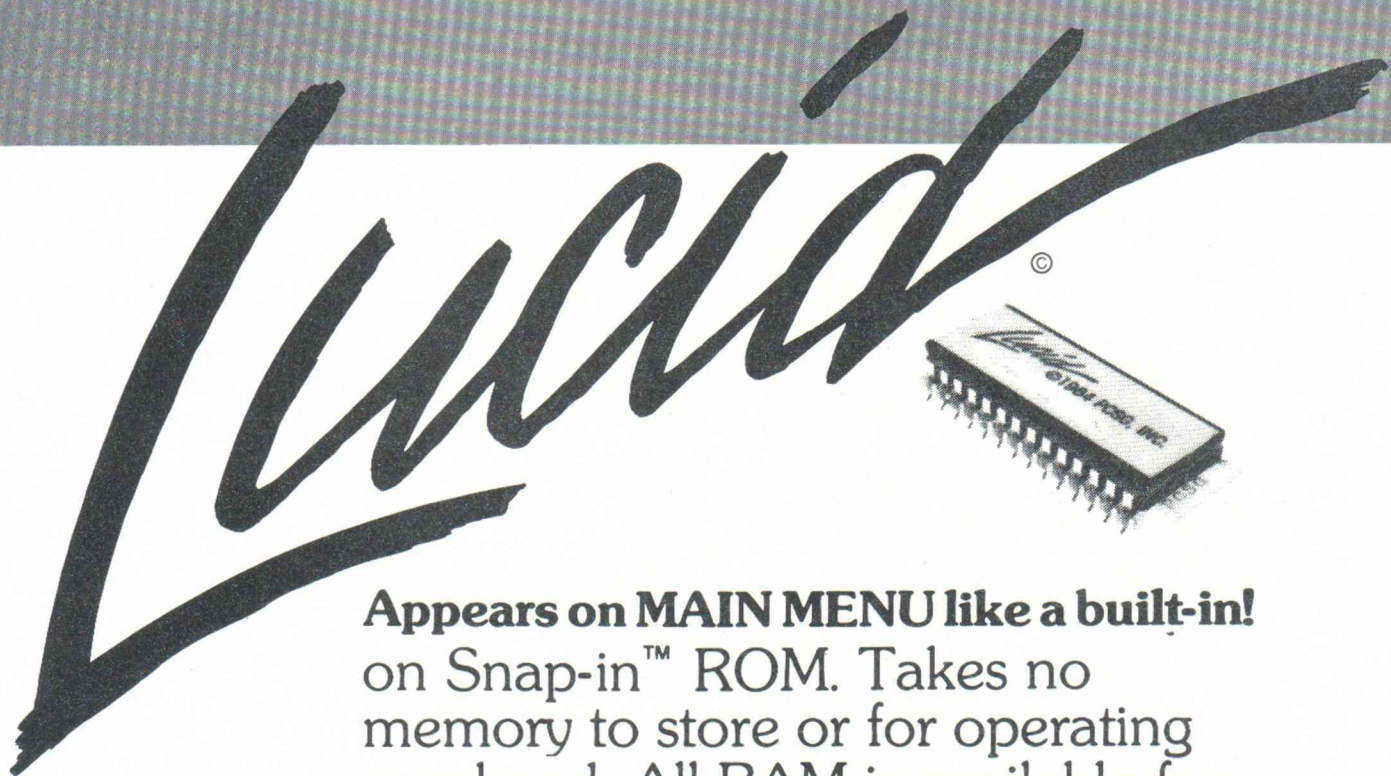
There's no such problem with Lucid because it lies in option ROM space (between 0000 hex and 7FFF hex). The only compatibility problem is physical. If something else uses the option ROM location then the Lucid ROM can't be plugged in. Obviously no two option ROMs can fit into the same socket, although it's easy to plug and unplug the ROM cartridges.

More subtly, some add-on RAM boards use the option ROM area as a handy place to put backup batteries, and are thus incompatible with any option ROM.

HEARTILY RECOMMENDED. There was a time when the first popular spreadsheet program, VisiCalc, was offered only for the Apple II. The result was lots of business managers bought Apple IIs even for offices using other machines.

The Model 100 is inexpensive, non-threatening, and portable, while Lucid is handy, easy-to-learn, and powerful. The Model 100/Lucid combination is far less expensive than the usual desktop computer with software, yet comparable in versatility and speed. I recommend it. □

Not only a spreadsheet, but a program generator as well.
So good we sell it on a satisfaction guaranteed 30 day trial.



Appears on MAIN MENU like a built-in!
on Snap-in™ ROM. Takes no
memory to store or for operating
overhead. All RAM is available for
data storage.

IS HERE!

LUCID® is truly the spreadsheet plus.
The result of a splendid, exhaustive
research and development program to
produce the fastest, most feature-rich
spreadsheet for the Model 100 that gives
you capabilities you cannot equal with
Multiplan* or even Lotus 1-2-3**.

\$149.95.

Portable Computer Support Group, Inc.
11035 Harry Hines Blvd., #207, Dallas, Tx. 75229
First with software for the Model 100. 1-214-351-0564

*Registered trademark Microsoft Corp.
**Registered trademark Lotus Corp.

© 1984, PCSG, Inc. VISA/MASTER CARD/C.O.D.

Anyone who experiences LUCID® won't settle for anything else.



is an advanced spreadsheet that is a program generator as well.

on Snap-In™ ROM

Changes your Model 100 into a totally different computer with capability you never thought possible.

PCSG says "Satisfaction Guaranteed or your money back within 30 days!"

PCSG was the first to develop software for the Model 100. That was back in April of '83. We could have rushed out onto the market with an inferior spreadsheet, but we chose to undergo a significant development and produce a spreadsheet for the Model 100 that would truly be world class. A spreadsheet that would rival Lotus 1-2-3*.

LUCID® is here now. It is on a ROM cartridge that snaps into the compartment on the back of your Model 100. It takes no memory to load and no memory for operating overhead. That means you have the full 29.6k bytes free to store your data.

LUCID® is amazing in so many ways. First of all, it is memory conserving. It will let you build a large spreadsheet—255 row by 126 column capacity. Where other spreadsheets actually consume 4 to 5 bytes for an unused cell, LUCID® uses no memory for empty cells. This lets you build huge spreadsheets in

your Model 100's RAM that could consume 80 to 100K on a desktop computer.

Secondly, LUCID® is fast. Whenever you ask other spreadsheets to calculate a file of any size, you can get up and go get a cup of coffee before they are through. LUCID® is so rapid, a 36 column corporate financial statement took less than 4 seconds to calculate.

Thirdly, LUCID® has features you won't find in most other spreadsheets. For example, when you type a label (text) it will cross column boundaries, in other words when you type a label or title it will appear as you type it irrespective of column of width. LUCID® also allows you to set column widths individually, and of course LUCID® has insert row and insert columns, as well as other standard features. LUCID® even lets your formulas refer to cells in other spreadsheet files. Further, LUCID® has what no other spreadsheet has: Cut,

Copy, and Paste. It uses the same keys as Cut and Paste in TEXT, but here's the difference: it takes all the formulas with it when you paste and they all automatically recalculate with the entire sheet.

And here is what is really amazing. You can copy or cut from one spreadsheet and paste into another spreadsheet or even a TEXT file.

LUCID® supports all BASIC math functions as well as Log, sine, cosine, tangent, exponentiation and other sophisticated math functions.

LUCID® has so many features that you will say "this is what I need in a spreadsheet", such as automatic prompting of an incorrectly typed-in formula showing just where the mistake was made.

LUCID® has expanded "go to" functions that remember and produce a windowing capability. It has a special block definition capacity that makes many other

features possible that refer to whatever section of the spreadsheet you designate. LUCID® has many enhancements that make it easy to use. Once anyone begins to use it they say "this is the way a spreadsheet ought to work".

In the same fashion as TEXT creates ".DO" or document files, LUCID creates ".CA" or calc-sheet files. In the same way you can get into any document file just by putting the wide bar cursor on the filename from the main menu, when you put the cursor on any ".CA" file, you are immediately working on that sheet.

But perhaps most remarkable is that LUCID® is not only a spreadsheet but a program generator as well. First, LUCID® lets you protect all cells against entry or change, and then unprotect just the cells you want for someone else to use as input fields.

Combined with the spill-over length feature, you can design input questions such as "What is your name?, What is your age?, Choose which applies to you: a) TALL b) MEDIUM c), SHORT, Type in the state where you were born". You can provide complete on screen instructions for use. This lets you create a series of prompts so that you can have a person totally unfamiliar with computers, entering information that you want to process, to create a personalized report based on calculations made using the facts and numbers they put in.

You see, LUCID® will not only process values, but text input as well so that the facts other than numbers can be responded to. LUCID® has the ability for you to refer in a formula to cells containing words. This feature combines with the capacity of doing "if then" statements that work by doing table look-ups against even massive X/Y charts of text or numerical information. A simple example based on the inputs

illustrated above would be to report the recommended calcium intake for tall people based on their age. You can make even more specific inquiries and reports, such as recommended amount of Aerobic exercise based on age and weight. Answers can be values or words depending on the situation, eq. 150 lbs., 25 years might be "30 minutes" but 280 lbs., 50 yrs might be "Warning: Aerobic exercise could be dangerous". You can produce a program that responds to inputs with no programming knowledge whatsoever.

You can prepare a report section in your spreadsheet with instructions to your user for printout, and they can produce a personalized printout that responds to their input. All your formulas and tables that did the calculations and provided the facts are invisible to that user. LUCID® is useful for doctors for patient questionnaires, trouble-shooting technicians, purchase clerks, people doing job quotes, stores for customer workups, insurance agents and anybody who needs to process specific facts and numbers to produce a report based on those responses.

LUCID® comes with a manual that explains not only the characteristics of LUCID®, but will train you how to use a spreadsheet even if you have never seen one before. You are shown how to do budgets, forecasts, breakeven analysis amortizations and many other types of personal and business reports and calculations.

User friendly is such an over-used term in this industry, but we can tell you that everyone who uses LUCID®, who has experienced any other spreadsheet, says that LUCID® is amazingly easy to use. A typical comment has been "I have never seen a spreadsheet that does so much, and yet LUCID® is so much easier and faster to use."

LUCID® is a result of a most exhaustive developmental effort in which PCSG's objective was to develop a spreadsheet that was better than the state-of-the-art. We are so pleased because LUCID® provides for the Model 100 spreadsheet capability you cannot equal on a desktop computer. Plans are underway to offer LUCID® someday for larger computers, but for now TRS 80 Model 100 owners have the good fortune of having this powerful exciting ROM program exclusively.

LUCID® is the easiest to use, fastest and yet most feature-rich spreadsheet, with capability that takes it far beyond the definition of a mere spreadsheet. We are so excited about LUCID®, because it changes the Model 100 into a totally different computer with power and function most never dreamed possible.

LUCID® is, in our opinion and that of those who have examined it, a breakthrough. We sell it on a 30 day trial. If you are not completely satisfied, return it within 30 days for a full refund. Priced at \$149.95, on snap-in ROM. Mastercard, Visa or COD.

© PCSG 1984

First with
software for
the Model 100

PORTABLE
COMPUTER
SUPPORT
GROUP

11035 HARRY HINES BLVD. No. 207
DALLAS, TEXAS 75229

PCSG provides hotline software support for Model-100. Call 1-214-351-0564. Available now directly from Portable Computer Support Group. We endeavor to continue as The Leader in Software for the Model 100.



SPEC COMPARISON

	Lucid	1,2,3	Multiplan	Visicalc
Cut and paste into other spreadsheets or TEXT	Y	N	N	N
Individually variable column widths	Y	Y	Y	N
References to labels in formulas	Y	N	N	N
# Rows	254	2048	255	254
# Cols	126	255	63	63
References to cells in other spreadsheets	Y	Y	Y	N
Two dimensional table lookups	Y	N	N	N
Cell protection	Y	Y	Y	N
Redirectable output	Y	Y	—	N
Long labels spill over column boundaries	Y	Y	N	N
Insert row / col	Y	Y	Y	Y
Delete row / col	Y	Y	Y	Y
Replicate	Y	Y	Y	Y
Copy	Y	Y	Y	Y
Absolute and relative cell references	Y	Y	Y	N
Function to count cells occupied by a value	Y	N	Y	Y
SQR	Y	Y	Y	Y
SIN				
COS				
TAN				
ATN				
LOG				
EXP				
INT				
TBL (Lookup, Choose, etc.)				
RND				
SUM	These Lucid functions operate on rectangular ranges as well as individual rows and columns.			
CNT				
MAX				
MIN				
★★				
Edit keys work on initial input	Y	N	N	N
Natural order of recalculation - with detection of circular references	Y	Y	Y	N
Automatic syntax checking of input - cursor stops at your mistake	Y	N	N	N
'Wander' mode on input of formulas to 'point' to cell references	Y	Y	Y	Y
'Wander' mode on edit of formulas	Y	N	N	N
'Go to' remembers where you 'came from'	Y	N	N	N
Sort by column and row	★	Y	Y	N
Graphing of selected ranges	★	Y	N	N
Automatic insertion of date into edit line with control-D	Y	N	N	N
Super compact - empty cells take no memory	Y	N	N	N
Table lookups can use labels as keys	Y	N	N	N
Available now on Model 100	Y	N	N	N
Automatically fits wide spreadsheets to narrow paper	Y	Y	Y	N
Ability to suppress zeros on printout	Y	N	N	N
Allows multiple printer fonts in same spreadsheet	Y	N	N	N

★ Extensibility by optional personality modules, with function key access.

★★ Lucid is designed to perform by simple one time entry formulas all other functions not provided as built-in.

Speed and Precision Comparison				
All benchmarks performed on a spreadsheet occupied by 600 formulas. all times in seconds.				
	Lucid on Model 100	123 on IBM PC	Multiplan on IBM PC	Visicalc on IBM PC
Sum of 600 cells	2.0	1.4	11.5	7.0
Insert column	0.5	2.4	11.0	6.0
Square root 600 cells	133	12.0	112	298
Replicate 100 rows	20.0	1.5	20.0	12.0
Decimal precision	14 digits	11 digits	14 digits	12 digits

PORTABLE COMPUTER SUPPORT GROUP

11035 Harry Hines Blvd. No. 207, Dallas, Tx. 75229

1-214-351-0564

VISA / MASTER CARD / C.O.D.

41 ON READER SERVICE CARD

GETTING OVER THOSE GETTING-ON-COMPUSERVE BLUES

I have yet to get anywhere near my goal of logging onto the Model 100 SIG on Compuserve, locating a text processing program, downloading it to my CCR-81 cassette recorder, and happily thereafter formatting my text.

By the way, how do you contact the SYSOP on-line? I'm sure at least one column devoted to the special needs of those just joining the Model 100 family would benefit many.

I'd also like to find a Model 100 users group in the Queens, NY, area.

Irene Iwan
Briarwood, NY

⇒ Well, it is fairly easy to do what you want. After you get to the Compuserve prompt "I", type GO PCS154. The Model 100 SIG will give you its sign-on messages. If this is the first time you are on the SIG, you will be given the opportunity to join the SIG. Since the Model 100 SIG doesn't charge for membership, you might as well answer the prompt, Yes.

Because you are interested in downloading a program from the databases, type XA at the Function: prompt. The system will ask you which database you want; answer with 1. A brief menu of database options will appear. There are many options that aren't listed in this menu. The one you want to use is CAT, for catalog.

First, type KEY which will list all the keywords currently in use in this database. If you see the words TEXT or FORMATTER listed, type "CAT *./DES/KEY: TEXT+FORMATTER" or whatever the keywords are that you want to use. The command will list every filename, with its attendant description, which has the keywords used in the CAT command.

If the XA1 database doesn't have any formatting programs, type XA2 to switch to the next database and repeat the procedure. You can skip the XA6 database because it is reserved for new product descriptions only.

For a complete description of the database commands, type HELP at the database prompt.

Once you've found a program you want to download, push the F2 function key on the Model 100 and give it a file-

name. Then type "TYP filename.ext (PPN)". TYP tells Compuserve that you want it to list the specified file. The filename must match exactly the name of the file, and the PPN number must also be listed (the PPN is the authors ID number, listed with the filename when you used the CAT command).

After the program finishes listing press the F2 button to stop downloading. When you are completely finished with the SIG and Compuserve, type OFF and the system will log you off, and you can hang up the phone.

Now go into the downloaded file in TEXT and remove the extraneous characters and make sure all the program lines are properly constructed (that is, that there aren't any lines that don't start with a line-number).

If you want to contact the SYSOP, go to the conference channel (option 9 on the SIG menu) and ask for the SYSOP. If he's there, he'll respond.

Finally, does anyone know of a Model 100 user group in Queens?

P/100 BACK ISSUES, WHERE ARE YOU?

How do I get back issues of Portable 100 magazine? Are they for sale; where can I get reprints if they aren't?

I use Scripsit for word processing, and it works just fine but takes up 5K of RAM. I find that often TEXT will do everything I want except double-spacing of the text. Is there any way to give a command to my printer (a DWP-210) to double-space the text while using TEXT?

Nicholas Ayo
Notre Dame, IN

⇒ You can order back issues for \$6 (First class postage and handling included) from Computer Communications, Highland Mill, Camden, ME, 04843. At present all issues from September 1983 to present, except April 1984, are available.

As yet I don't know of any fix you can give to TEXT to get it to double-space text when printing. Similarly, the DWP-

210 doesn't have a control-code to do automatic double-spacing. Sorry, but it looks like you're stuck with Scripsit for the fancy stuff.

If you can handle BASIC programming you might consider the program in listing one; it occupies only 807 bytes of RAM and needs only 800 bytes of free RAM to operate. All it does is double-space your output. If you want you can add a left margin by specifying a TAB in front of the LPRINT. It's disadvantage is that it is slow.

100 TO MAINFRAME, COME IN MAINFRAME.

I have had problems uploading from my Model 100 to my disk on an Amdahl 470 V8 mainframe. The uploading can be done via either the COLLECT command of the Wylbur editor or by the INPUT command of XEDIT in CMS. Both prompt for line-by-line entries of up to 133 characters.

M711E works fine for using the Model 100 as a dumb terminal and for downloading from the mainframe to the Model 100, but I haven't been able to get the files uploaded without losing the first three to twelve characters of each line after the first one.

I suspect this is because each line is sent to the mainframe immediately after the carriage return and before the computer can send the next-line prompt. The computing center says it can do nothing from its end.

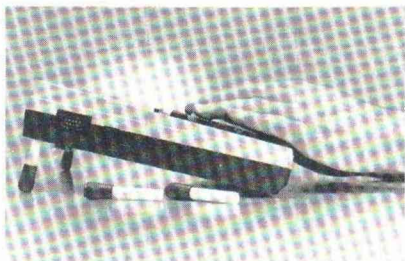
Is there an adjustment I can make with the Model 100 or the TELCOM program, or any communications software for the Model 100, that might solve my problem?

Paul Lachance
Ottawa, Ontario

⇒ You're right, the Model 100 is sending each line without waiting for the mainframe prompt; which means the mainframe is losing the first few characters of each subsequent line.

You have two possible solutions: use a BASIC program to send out your files one line at a time, or buy a communications program that has this ability.

PROP LEGS



- Elevate your Model 100 to the proper angle for use
- Slip easily into rear screw holes in case
- Snug fit
- Non-skid rubber feet
- Durable plastic legs
- Handy — your Prop Legs fit in your pocket!
- Only \$5.00/pair

Includes shipping, handling, & CT residents sales tax.

Send check or money order to:

KJM Development

P.O. Box 698, W. Hartford, CT 06107

DEALER INQUIRIES INVITED

19 ON READER SERVICE CARD

800
225-5800
800
225-5800
800
225-5800
SUBSCRIBE NOW!

FULL-DUPLEX

Listing one

```
10 CLEAR 770: CLS: PRINTTAB(10)"Double-spacing formatter": MAXFILES=1:
FILES: INPUT"Filename";A$: INPUT"Line Length";A
30 OPEN A$ FOR INPUT AS 1
70 IF EOF(1) THEN CLOSE: CLS: PRINT "Finished": GOSUB 190: RUN
80 LINEINPUT#1,A$: B=A: C=LEN(A$)
90 IF C<A THEN Z$=A$: GOSUB 180: GOTO 70
100 IF MID$(A$,B,1)<>" " THEN IF B>1 THEN B=B-1: GOTO 100 ELSE
PRINT"Format Line error":END
110 Z$=LEFT$(A$,B-1): GOSUB 180: A$=MID$(A$,B+1): B=A
120 IF LEN(A$)>A THEN 100
130 IF C<255 THEN Z$=A$: GOSUB 180: GOTO 70
140 IF EOF(1) THEN CLOSE: Z$=A$: GOSUB 180: CLS: PRINT"Finished": GOSUB
190: RUN
145 LINEINPUT#1,C$: C=LEN(C$): IF LEN(A$)+C < B THEN Z$=A$+C$:
GOSUB180: GOTO70
150 A1=LEN(A$): A$=A$ + LEFT$(C$,B-A1)
160 IF MID$(A$,B,1)<>" " THEN IF B>1 THEN B=B-1: GOTO 160 ELSE
PRINT"Format Line error":END
170 Z$=LEFT$(A$,B-1): GOSUB 180: IF A1>B THEN A$=MID$(A$,B)+C$: B=A:
GOTO 120 ELSE A$=MID$(C$,B-A1+1): B=A: GOTO 120
180 LPRINTZ$: LPRINT: RETURN
190 PRINT@281,"Press <ENTER> to continue, M for MENU";
200 A$=INKEY$:IF A$="M" OR A$="m" THEN MAXFILES=0: MENU ELSE IF
A$<>CHR$(13)THEN 200 ELSE RETURN
```

Any BASIC text formatting program (such as the simple one in listing one from the previous letter) can be adapted for the first option, just change the program to OPEN the RS-232 or modem channels (COM: or MDM:) and use PRINT# to send the file (with a built-in delay loop after each line to allow the mainframe to catch up with the Model 100). For the program in listing one, add the OPEN statement as line 20 and change the first LPRINT in line 180 to PRINT#1. Replace the second LPRINT with a simple FOR...NEXT loop to give WYLBUR time to prepare for the next line.

If you decide to try communication software, try any of these guys. All have telecommunications packages:

Traveling Software 800-343-8080
11050 Fifth Ave.
Seattle, WA, 98125

Software by Sigea 617-647-1098
19 Pelham Rd
Weston, MA, 02193

Micro Demon 803-733-0980
P.O. Box 50162
Columbia, SC, 29250

IT ALL FLASHES BEFORE YOUR EYES

I often turn off my Model 100 without having finished writing a document — to make a cup of coffee or answer a phone call. When I return to writing and switch on the machine again, the document file I have been working on momentarily flashes before my eyes on the display then reverts to the Menu.

It would be nice to be able to simply go back to where I left off. Is there any way to have it do this?

Peter Samuel
Washington, DC

⇨ Unfortunately, there isn't any way to change the power-up sequence of the Model 100 to get what you want. The closest you can come is to use the POWER command. This command automatically powers off the LCD display after the time you specify, but lets you power back up without going back to the MENU. POWER 10 turns off the display if you haven't typed anything for 60 seconds.

So if you leave the computer for several minutes it will shut down to conserve power. When you return, slide the power switch off and back on again to restore the display without losing your place in the TEXT file.

NEITHER SNOW NOR SLEET NOR BUGS...

I downloaded "EMAIL6.MMM" from Compuserve, but I have some questions. First, is there any documentation for this program? Second, the last line says "10009 REM If using an IPL change line 360 to 360 RUN LOCK.BA"; where do I find this program?

I went after this EMAIL program in the first place because of the attractive description of such a program in the book The Model 100 Companion by the editors of Osborne/McGraw-Hill.

Finally, when I tried the program it would log-in about half the time, but every once-in-a-while it would wait for

FULL-DUPLEX

the main menu to go past and then at the Compuserve prompt "!" it would print R SNDMAL. The menu would repeat and at the new prompt, and it would print nothing. After waiting for a couple of minutes, I would give a Control C and start over again.

Ralph Winter
South Pasadena, CA, 91030

⇒ First, there is supposed to be documentation for the EMAIL program somewhere in the XA databases, but everything changes so fast it is sometimes difficult to find. Search the different databases using the keyword "EMAIL." You should find what you need.

The LOCKBA program is a security program developed for the Model 100 to prevent other people from snooping through your files. The program is constantly being updated, so you'll have to search the databases to get the latest version. Use the keyword Security.

Finally, the problem is that SNDMAL is a program you operate from your personal programming area on Compuserve. At the Compuserve prompt "!", your program should type EXI. At the OK prompt, type R SNDMAL.

CAN FONT-LESS WRITER FIND HAPPINESS WITH NEC?

I have a Transtar printer that I use successfully with a computer that runs Perfect Software, but when I try running various formatting programs on my NEC 8201 the printer won't bold, underline, superscript or subscript (which, as a writer, I need). The Transtar people said the programs need drivers to effect those fonts. As I am a novice programmer I can't do such things.

I've purchased four programs that promise to support special printer commands and none of them work. Do you have any suggestions? I've enclosed a copy of the demonstration program that Transtar prints in their manual.

Gary Litz
Oakland, CA

⇒ You don't really need drivers to use the special features of your printer, you can embed the controlling codes directly in your TEXT file. For example, typing "H (U2"(DO" and sending it to

your printer will result in H20, with the 2 printing subscripted.

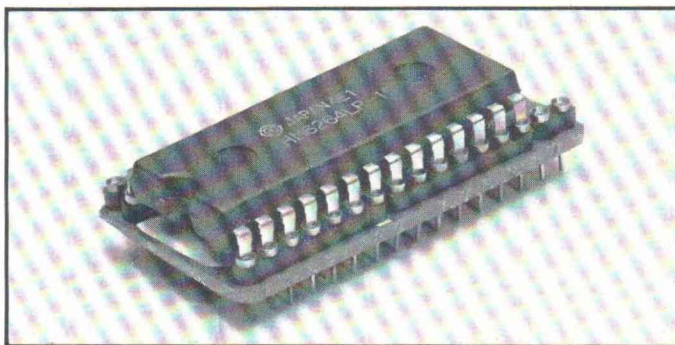
The actual keystrokes are: "H CTRL P ESC U 2 CTRL P ESC D O" (the ESC key puts character 27 in your file). With these in place in your TEXT file, any of the formatting programs will work with your printer. The advantages of the formatting programs are in left margin positioning, pagination, linespacing, and other page parameters you can't control with the built-in TEXT printing routine.

What you'll need to do is make a list of the various control codes and what they do, then embed them as you see fit in your files. □

Editor's Note: Full-Duplex is your column. It's dedicated to solving the problems of users of the Model 100. If Terry can help you, please address your letters to: Terry Kepner, P.O. Box 481, Peterborough, NH 03548. Please remember to include a return address with all Full-Duplex correspondence.

8K Expansion RAM

Plug-in Memory Module for Model 100, M-10 & 8201



\$44⁹⁵ each

\$129⁹⁵ set of 3

- Low Power Version 8K CMOS Static RAM
- 30 Day Satisfaction Full Refund Policy
- High Quality Sockets
- Instructions Include Memory Test Program Listing
- One Year Warranty

M/C, VISA, Check or Money Order

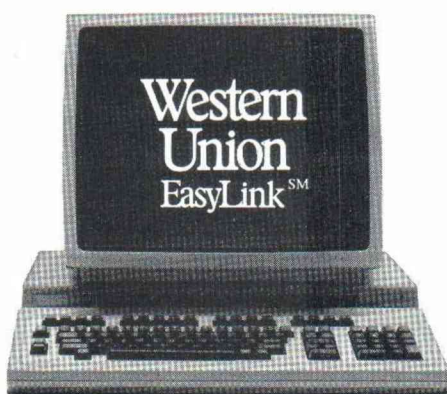
Shipping-Add \$1.50 UPS Ground
or \$4.00 2nd Day Air.

CA Residents add 6% Sales Tax



Cryptronics, Inc.

11711 Coley River Circle, Suite 7
Fountain Valley, CA 92708
Phone: (714) 540-1174



Which electronic mail service delivers much more than mail?

Every one of these electronic mail services does a very good job of delivering the mail.

But only one delivers so many more online services with equal expertise.

The Source.

With The Source, you can have the daily news delivered along with your daily mail. Make airline reservations. Trade stocks. Hold a computer conference. Communicate with thousands of people who share your interests.

Even get the latest word on new hardware and software products, in seconds.

All this, and more, along with the electronic mail service called "the most powerful available anywhere."

And all for just \$49.95,

plus reasonable hourly usage fees.

Call 800-336-3366* and you can have the power of The Source working for you in a matter of minutes.

Or for more information, visit your nearest computer dealer or mail the coupon below.

The Source is a service mark of Source Telecomputing Corporation, a subsidiary of The Reader's Digest Association, Inc. The source services are offered in participation with Control Data Corporation. ©Source Telecomputing Corporation, 1985. MCI MailSM is a service mark of MCI Communications Corp. EasyLinkSM is a service mark of Western Union.

*In Virginia or outside the continental U.S. call (703) 734-7500.

Please send me more details about The Source.

Name _____ Telephone # _____

Address _____

City _____ State _____ Zip _____

☐ ☐ I own a personal computer.

yes no

Mail to: Source Telecomputing Corp.
1616 Anderson Road
McLean, VA 22102

PICCO3

The SourceSM

INFORMATION NETWORK

The most powerful resource
any personal computer can have.

SourceMailSM

Electronic Mail

Mailgram[®] Message

Service

PARTICIPATETM

Computer Conferencing

CHAT Interactive

Communications

News Bulletins

UPI News Service

Associated Press

Scripps-Howard News

Service

Accu-WeatherTM

The Washington Post

Electronic Edition

Sports

BYLINES Feature

News

Portfolio Management

Real-Time Stock Quotes

Delayed Stock Quotes

Spear Securities Online

Trading

Media General

STOCKVUE

Donoghue Investment

Newsletter

INVESTEXT Research

Reports (1st Qtr. 1985)

Management Contents

Publication Abstracts

Employment Services

UNISTOX Market

Reports

Commodity World

News

BIZDATE Business

Magazine

MICROSEARCHTM

Hardware, Software

Reviews

Member Directory

POST Bulletin Board

Classifieds

Member Publications

Official Airline Guide[®]

A-Z Worldwide Hotel

Guide

Travel, Hotel

Reservations &

Ticketing

Restaurant Guides

Travel Tips, Tours,

Discounts

Movie Reviews

CompuStore Electronic

Shopping

Games, Educational

Quizzes

ABACUS ONLINE IS APPLICATIONS ORIENTED

In Northern California, over the hill from Berkeley, lies Diablo Valley, a haven for Model 100 owners. Thanks to the Valley's TRS-80 Computer Society, over 80 people have a meeting spot.

Society secretary Richard Hanson reported at least 30 percent of the members are 100 owners. "We're applications oriented," he said, "and have the time to really delve into the machine. Most members are middle-aged or retired."

Besides working toward an MBA in information management at John F. Kennedy University, Hanson runs Abacus Computer Services, a local mail order computer supply company, and a local bulletin board (BBS).

Called Abacus Online, the BBS features a Model 100 SIG initiated by Hanson: "I'm still so excited about the usefulness of the Model 100 that I've started... Club 100... available free to registered members of Abacus Online, also free to those who identify themselves as 100 callers."

Other Valley residents interested in joining this avid group may get membership details by contacting Hanson either via the BBS number, 415-939-1246, or by calling him directly, 415-932-8856.

BEANTOWN BEEPERS DILEMMA

The Boston Model 100 User Group reflects the heat of that New England town's computer energy... especially of the lap-size market. In the throes of a healthy debate, the group is trying to expand. President Allan Trick explained the dilemma:

"The history of this group has been of a small nucleus of people. We're trying to expand and are debating now whether we're going to continue being a satellite of the TRS-80 group, or become a full group for all lap-top computers.

"The question is whether the Model 100 should be considered a Radio Shack computer, or a lap-top machine.

"Another issue is the short longevity

of 40-column screened portables. There's a lot of third-party software support for the 100, but some people feel that Radio Shack is dragging its feet."

It's an interesting discussion and one that Trick has promised to keep us posted on.

TRULY GLOBAL. Recent meetings have been hosted by the Boston Globe. Very appropriate since the major daily has outfitted more than 20 staffers with the 100. Apparently accessing the Source via the 100 has made more than one news reporter's life easier.

Guest speaker, Globe religion editor Jim Franklin, offered attendees valuable time- and money-saving hints regarding the Model 100 and videotex services like The Source, CompuServe, and Delphi.

President Trick received an offer from author Steve Schwartz (75745,14471) open to all 100 users. Through Schwartz's publisher, Scott, Foresman, specials and free samples of Model 100 books and software will be available.

The next group meeting will feature another Boston Globe staffer, who will talk about the standard utilities offered by the paper to its reporters issued 100s. Sounds like a must for anyone using a 100 for writing on-the-run.

FRAGILE LUG-GAGE

Coined as being "very fragile," LUG.100 (Lap Users Group) may be small but "we're friendly," said president Sarah Stanbler. She hosts the meetings in her Manhattan apartment the third Tuesday of every month.

Stanbler said members have found featuring a speaker each meeting a real boost to membership. Model 100 SIG assistant SYSOP Dave Thomas was a recent guest, as was LUG member and author Carl Oppedahl (see the Lucid review, page 17, this issue).

Currently a two-part series is being presented that introduces LUG'ers to running their own BBS. Al Berg, of Bekro International, Ltd. leads the discussion.

DUES OR DIE. There's been talk of starting a yearly dues. Up until now, member-

ship has been free, but "we'd like to get better organized," confided Stanbler, and with meeting notices to be mailed out, it all adds up.

"I've never met a computer person who wasn't high-energy," remarked Stanbler who fits the adage. A freelancer who writes computer documentation, her company, TechProse, has clients the likes of Time, Inc.

Lug.100 will be celebrating its first birthday this Spring. New members always are welcomed. Interested readers in the LUG.100 area may contact Stanbler either through CompuServe, CIS ID 72236,3352 or by telephoning 212-222-1713.

OF PASSING NOTE

We've received word that there's a small group of law students at Oral Roberts University, Tulsa, OK, happily putting the 100 through its paces.

"There are seven of us in the law school using the 100 to take notes, make outlines, and write papers," contact Victor Smith wrote Portable 100/200. Others interested can write Smith at 1906-C E. 79th Place, Tulsa, OK, 74136.

SOUTHERN FRIENDS. To improve attendance, the Richmond, VA user group has started on a meet-every-other-month schedule. Leader Bob Ripley urges members to arrive a good hour before the 8 pm kick-off time, however, so they can swap questions and expertise.

Future plans for the Virginia group... Ripley said he hopes to get a bi-monthly newsletter out to members.

Editor's Note: We want to keep readers informed about Model 100 user groups. If you know of a group in your area, let us know about it. If you've some info about your user group that you'd like others to know about, let us share it with readers. Send user-group correspondence to Nancy Laite, Portable 100/200 Magazine, Highland Mill, Camden, ME 04843. Or call us at 207-236-4365.

AUTHORS SERVE UP AN ACE ABOUT COMPUSEVE

How to Get the Most Out of CompuServe

Charles Bowen and
David Peyton
Bantam Books Inc.
666 Fifth Avenue
New York, NY 10103
277 pages \$12.95, softbound

By **MADELINE P. DURHOLZ**

CompuServe Information Service (CIS) is a comprehensive popular, and low-cost on-line network. But often it causes its members frustration and expense because of its size and complexity. A user-friendly tour guide through the variety of CIS offerings and the means to access them was needed to fill the void.

Charlie Bowen and Dave Peyton, both system operators (SYSOPS) of CIS Special Interest Groups (SIGS) as well as Model 100 owners, now give us such a guide. The authors begin by putting first-timers at ease with a tour of CompuServe's fun areas.

Both the neophyte and experienced user can profit from joining the on-line field trips to CB-land, the personal file area, news services, Access, EMAIL, SIGS, on-line shopping, financial services, games, time-and-cost-saving-advanced features, and a useful appendix.

THE ENVELOPE, PLEASE. After two short introductory chapters, the authors begin with the CIS starter kit snap pack's contents, selection of the phone link nodes, and log-on procedures. Suddenly the new user is accessing a CIS data base and composing EMAIL. The authors take a can-do attitude, never allowing the reader to feel incompetent.

They're quick to point out CIS strengths and weaknesses, and encourage the neophyte to hang on to menus as necessary. While recounting an anecdote or reflecting upon a just completed on-line excursion, Bowen and Peyton's timing for introducing an additional piece on housekeeping, cautions, tips, control codes, troubleshooting, or cost saving is uncanny and effective. I conclude that potential CIS members and new users are well-advised to use their free sign-up time

learning how to get the most out of CIS... start at square one with this book.

OLD HAT? Even some of us avid Model 100 SIGers avoid such options as the unique Sunday conference. Or never SEN/TALK from the fine message base. Or do not check out public ACCESS files. Or have never tried CB. Here's an opportunity for experienced users to review the necessary commands and special features in one shot and for very little cost. Some command features are slightly different from those on the SIG, but the basics aren't. Try them. You might like them.

Most inveterate SIGers rarely look at the Videotex area of CIS. I know I did an about face when my first bank as a kid, the conservative Shawmut of Boston, appeared on CIS offering electronic banking. Then there's the Official Airline Guide, IRS & Social Security data bases, also new to CIS. A tour through CIS as a whole by Bowen and Peyton would be worthwhile.

Each group of chapters or on-line tour ends with a summary of commands and features just learned. This is quite handy. There's also a chapter covering special default settings, personal menu creation, and file-transfer protocols. Even more useful is the On-Line Survival Kit appendix. Here the authors collect the most important procedures, commands, cautions, and problem-solving hints. To these they add lists of node symbols, a quick index to CIS offerings, and a short bibliography of publications on telecommunications. Unfortunately, the bibliography doesn't include a list of the CIS-published specialized manuals which may be ordered through Feedback, or articles relating to CIS which have appeared in journals such as Portable 100.

DOES IT OR DOESN'T IT? As indicated earlier, the new member should begin with this guide, putting all others aside. The authors expressed intent to prevent such folks from wasting free sign-up time, getting lost in an electronic maze, becoming frustrated and even giving up is certainly achieved. Their recommended on-line training time of six hours at a total of \$36 is a small price to

pay if the user's goal is to become expert at all CIS offerings.

There's almost as much useful material for experienced CIS users as for newcomers. I'd expect that many would start off just reading chapter-by-chapter only to come upon some CIS section worth trying field-trip style. If not, the guide is worth its price as a quick reference tool. It sure is for me.

I've found no one yet who has written the perfect book. But Charlie Bowen and Dave Peyton have put the Serve back in CompuServe, and thus have reached their objective.

TOO TECHNICAL FOR NOVICE, TOO SKIMPY FOR PROFESSIONAL

The Photographer's Computer Handbook

B. Nadine Orabona
Writer's Digest Books
9933 Alliance Rd.
Cincinnati, OH 45242
192 pages \$14.95, softcover

By **CHARLEY FREIBERG**

There's a lot of information in this book. There's also a lot of information missing. A great deal of what is included seems useless for raw beginners and especially so for already too-busy photographers. Author Orabona takes us through the questions whether we need a computer for our business (insisting that we do), what types of computers, programs, and peripheral equipment are needed. She does a good job here. But instead of giving lists of computer companies, products, prices, availability, and compatibility she launches into a lecture about the binary system and 8- and 16-bit systems. Not necessary and confusing.

BEST PART. She suggests methods of setting up stock photo files, query letters, assignment sheets, and other forms required for a photo business. Her suggestions in these matters are the best part of the book. Take this information, go to a computer store, ask questions, and use some equipment. Then this book proves worthwhile.

The only operating system author

BOOK REVIEWS

Orabona covers, and quite thoroughly, is CP/M-80. She calls it the standard. Some MS-DOS folks may take hearty exception to that. However, she does mention MS-DOS. I got a little twitchy when she described word processing, data bases, and spreadsheets as "generalized software." Whatever happened to application software?

NIX ON PHOTONET DETAILS. The Photographer's Computer Handbook also includes useful information on Photonet, a wonderful network for professional photographers. I've picked up work from Photonet and recommend it.

Unfortunately, Orabona doesn't tell us how much Photonet costs to join or to use, how much communications software costs, or, even any names of this kind of software, or names and prices of modems.

I've never heard of Photo-1, another network for photographers. The author informs us that the system wasn't running when her book was published.

LOTS LEFT OUT. She's good enough to give pages of possibly useful information on specific commands for certain brands of word processors, data bases, and spreadsheets. But she fails to mention the names of the programs, what systems they work on, availability, and price. You can be sure they work on Kaypro II since the book is dedicated to her computer. Little wonder that CP/M is covered so well.

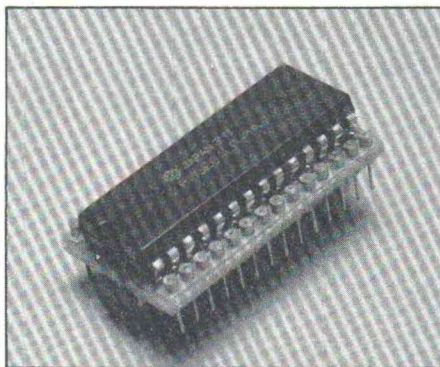
Here's another area of information left out: computers for process control. In a studio, ceiling tracks with motors and telescoping arms with lights on the ends have been around for years. But to be able to control the movements with a joystick, memorize set ups, and monitor all aspects on the terminal with a simple graphics program ... that's a delight. And this feat can be performed by virtually any computer. None of this was mentioned in the book.

I must say to her credit that she does mention digitized images. Whimsically. Having done software and hardware development work on DEC-based equipment for extremely high-resolution image processing systems, I know how close we are to continuous tone computer-generated images.

GOOD LOST IN REDUNDANCY. Orabona covers a lot of territory. Taxes, inventory, book-keeping, and all the other aspects of business life are given at least three different sections in the book. But I think close to 50 percent of the pages in the book could have been deleted — mostly the technical material and the redundancy. Then she would have produced an excellent guide. □

8K RAM MEMORY MODULES

DEALER INQUIRIES WELCOME
TRS-80 IS A TRADEMARK OF TANDY CORP.



**EXPANSION RAM FOR
TRS-80 MODEL 100,
NEC 8201 AND OLIVETTI M10
PORTABLE COMPUTERS**

\$48⁵⁰ Each

- Exact replacement ■ Easy to install
- Installation instructions included
- High quality manufacturing ■ warranty included ■ uses 50% less back up power than other chips

**P.G.
DESIGN
ELECTRONICS, INC.**

66040 GRATIOT, RICHMOND, MICH. 48062 • (313)727-2744

35 ON READER SERVICE CARD

RESEARCH REPORT

MICROCOMPUTER OPERATING SYSTEM STRATEGIES

- Explores impact on micro hardware and software business of trends in operating systems, including Unix, MS/DOS, CP/M.
- Discusses user perceptions of operating system elements including data management, and the interface between applications software, programming tools and DBMS.
- Details past and future impact of Xerox Dynabook and Smalltalk developments on products such as Apple's Lisa, Quarterdeck's DESQ, Visicorp's VisiOn, etc.
- Establishes the product-planning parameters for future micro product offerings, and reviews probable adherence to these parameters by AT&T's future 32-bit micro, IBM's rumored "4301" and other upcoming products of significance.
- 237 pages; 42 exhibits; publishes September 1983; price \$1,650.00.

For free descriptive literature and a detailed table of contents, contact:

**INTERNATIONAL RESOURCE
DEVELOPMENT INC.**

30 High Street
Norwalk, CT 06851 U.S.A.
Call TOLL-FREE
800-243-5008
(203) 866-6914
WU Telex 64 3452



58 ON READER SERVICE CARD

Text processing power that no other program can equal.

Write ROM[®]

on Snap-in[™] Cartridge \$149.95

PCSG says "Send it back in 30 days for a full refund if you don't agree."

WRITE ROM is the definitive word processing extension for the Model 100. Less than two months after the Model 100 was announced Portable Computer Support Group introduced the very first text formatter for the Model 100. That program, called Write+ was licensed to Tandy and is now in Radio Shack Computer Centers as Scripsit-100. Write+ had many powerful features and most reviewers still say it is the best of the cassette based text formatters.

But now eighteen months later PCSG has introduced WRITE ROM. Those who experience it have said "WRITE ROM literally doubles the text processing power of the Model 100."

WRITE ROM is what you would have expected PCSG, the software leader for the Model 100, to develop in the 18 months since Write+ was brought to the market.

First of all WRITE ROM as it's name implies is on a snap in ROM. You

simply take a quarter and open the little compartment on the back of your Model 100 and press in the ROM cartridge. It is as easy as an Atari game cartridge and can be snapped in and out instantly so that you can use other ROM programs whenever you wish.

WRITE ROM appears on the main menu just like one of your built in programs. It lets you do every formatting function you would expect like setting margins, centering, right justifying and having headers and footers. But it does them under function key control, with the clear and easy to learn and use techniques for which PCSG has become famous.

In keeping with PCSG's long standing reputation for superlatively simple yet comprehensive documentation, the manual is a model of lucidity.

WRITE ROM remembers your favorite format settings so that you can print a document without any set up, but you can change any formatting or printing parameters instantly with a function key.

WRITE ROM's 'pixel mapping' feature shows you an instant picture on the screen of how your printout will look on paper. Incidentally, PCSG introduced this feature on the Olivetti M-10 version of Write+ over a year ago.

In all there are 44 separate features and functions that you can do with WRITE ROM, and some of these features are truly breakthroughs for the Model 100.

First, WRITE ROM lets you do search and replace, with function key ease of course. Any word or phrase in a document can be searched for and replaced with any other phrase where the search words appear.

Second, WRITE ROM lets you send any text (formatted or not) to any other computer over the phone with just a function key. What's more, it dials and handles sign on protocol automatically.

Third, WRITE ROM has a wonderful feature called 'Library' that gives your Model 100 power that you never thought it could have. Library lets you

record favorite phrases, words, or commonly used expressions (sometimes called boilerplate). Any place you wish any library text to appear in your document you just type in a code. WRITE ROM automatically inserts the text just like a Xerox Memory Writer.

The library phrase is inserted as your document is being printed rather than as it is being typed, so this feature conserves memory in documents where a long phrase is used repetitively, since each occurrence of a library phrase in your document is indicated by a single code character.

This Library feature is so powerful these two pages could be devoted just to telling you about things it can do. For example, you can have names and addresses that you designate in one text file with a customer or supplier number. Or you can have inventory items with stock numbers.

In your document you simply type in the customer or stock number and that entry from the other file is automatically inserted in the document. Picture what you can do with that kind of capability.

Because WRITE ROM is written in machine code, it is blindingly fast. No one can claim faster operation.

Because it is on a ROM it uses virtually none of your precious RAM for its operation, and it does not interfere with other machine code programs in your RAM. It works with any printer, serial or parallel. At the touch of a function key you can find the size of a RAM file in bytes and in words (ideal for journalists and other writers who need to know how many words are in a piece). You can make a duplicate copy of a document file under a new name. You also can rename or delete (kill) any RAM file with function key ease.

This description only scratches the surface of this amazingly powerful piece of software. You can automatically insert the date or the time anywhere in your document; WRITE ROM senses when you are nearing the bottom of a page, and at your command will start a new paragraph on the next page.

Write+ was the Model 100 pioneer in the use of 'dot commands' to allow control of such things as margins, centering, line spacing and other appearance related changes in the middle of a document. WRITE ROM goes a step further by making all the dot commands Wordstar compatible. This means that if you wish you can quite easily prepare a Wordstar compatible document. Then you can use features of WRITE ROM (such as pixel mapping) that Wordstar lacks, before uploading to your desktop.

A Mail Merge feature allows you to send the same document to every name on your mailing list, personalized for each recipient.

WRITE ROM enables you to do underlining, boldface and correspondence mode as well as any other font feature that your printer supports in a way that is so unique many users say "It is worth the price of the program just to have this one feature."

Here's how it works: When you want to underline you don't have to remember some complicated printer code. You just type Graph-U, and to end underline you just type Graph-U again. For boldface it's Graph-B and to end boldface it's Graph-B again. It's easy to remember and easy to do. WRITE ROM lets you record the codes from your printer's manual one time only and then just use these easy to remember signals any time you want to do a printer font feature.

WRITE ROM does so many things that other text formatters cannot do.

For example you can not only double space but triple, quadruple or any other.

WRITE ROM allows you to use your TAB key in a document so that you can indent the first line for a paragraph easily or space rapidly over many tab stops.

WRITE ROM has another nice feature. It allows you to undent. This means that you can have paragraphs that have a first line that projects to the left of the remainder of the paragraph.

WRITE ROM allows you to not only center a word or phrase on a line but you can center copy vertically on a page as well.

There are many other examples of excellent programming evident in WRITE ROM. The line feed problem of the Model 100 is dealt with by the simple use of a function key. Files are selected by moving the wide bar cursor over the WRITE ROM menu.

PCSG makes the claim that WRITE ROM is the easiest, fastest and most feature rich text formatter for the Model 100, as well as being the only one on a Snap-in ROM. You can do more with WRITE ROM than anyone thought possible for the Model 100. We at PCSG are happy to offer WRITE ROM because it expands the Model 100 to a dimension of text processing you cannot equal on even larger computers.

If you are already a PCSG customer you know the impressive quality of PCSG craftsmanship. We brashly state that WRITE ROM is the best you can buy. But don't take our word for it. It is sold on a thirty day trial. If you aren't as excited as we are, return it within 30 days for a full refund. Priced at \$149.95, on Snap-in ROM. Mastercard, Visa or COD.

First with
software for
the Model 100

PORTABLE
COMPUTER
SUPPORT
GROUP

Call 1-214-351-0564.
11035 HARRY HINES BLVD. No. 207
DALLAS, TEXAS 75229

PCSG provides hotline software support for Model-100. Call 1-214-351-0564. Available now directly from Portable Computer Support Group. We endeavor to continue as The Leader in Software for the Model 100.

EVERY DISK/VIDEO INTERFACE USER NEEDS THIS PROGRAM.

DISK-BUDDY manages your disk files with one keystroke!

The DISK-BUDDY menu is like the M100 command menu except it works on disk files instead of RAM files.

Just position the cursor over the file of your choice and press the function key. It takes one keystroke to:

- Display a disk directory of either drive
- Load a file or program from disk to RAM
- Run a program directly from disk

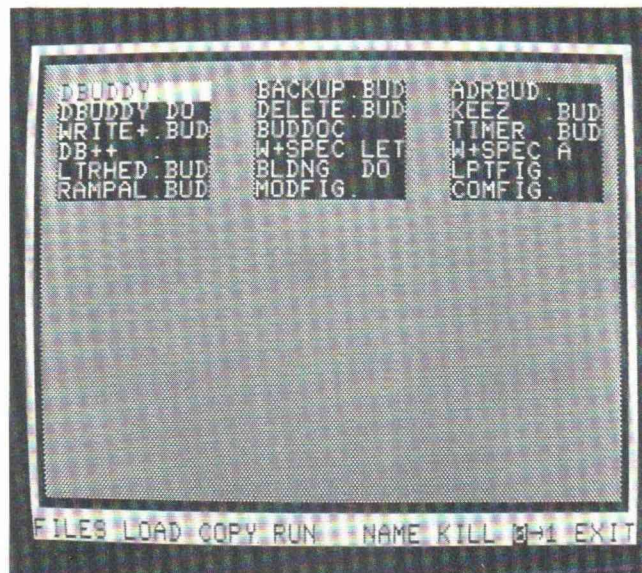
With two keystrokes:

- Delete a file from a disk (the second stroke is for safety)
- Send file of any length (up to the capacity of the disk) to serial port, printer, screen, cassette or another disk drive.

DISK-BUDDY unlocks the power of the M100 operating system. Commands for computer and peripherals, stored on disk, can be sent at the touch of a button.

One touch can ready your printer for word processing, another sets it for BASIC listings.

Change function key configurations instantly. Keep a set of key functions for word processing, telecommunications, editing, programming, etc.



A typical Disk-Buddy Menu.

Note the function key labels on the command line.

DISK-BUDDY IS A SOFTWARE BUNDLE!

Our package contains several programs, powerful utilities which could be sold separately.

RAM-Pal has many of the same powerful functions as DISK-BUDDY but manages RAM files.

Memory low? ADR. BUD dumps your current ADRS.DO and NOTE.DO files to disk, and optionally deletes them from RAM, with one key stroke, of course. Later, load and save them from the DISK-BUDDY menu; one key stroke each.

DISK-BUDDY works great with programs that use "spec" files and templates. Just keep your favorite models stored on disk. A key touch loads and saves it to RAM, another touch gets you into your application. Changing formats is just as simple: load the new template with a single keystroke.

DISK-BUDDY AND THE DISK-BUDDY BUNDLE, INCLUDING RAM-Pal, ADR.BUD, TIMER.BUD and other demonstration programs are shipped on disk with full instructions, plus information on interfacing your own programs with DISK-BUDDY. Turn your M100 into a powerful, friendly desk top system! Tips for driving your M100 are included.

BuddySystems

TO ORDER: Send check or money order for \$39.95 (plus \$2.00 postage and handling) to BUDDY-SYSTEMS, 220 West 24th Street, New York, NY 10011 or phone (212) 243-2129 for C.O.D.

For TRS-80 Model 100, 24K RAM, DISK/VIDEO INTERFACE, WITH MONITOR, TV, OR LCD.

7 ON READER SERVICE CARD

YOUR 100'S ONLY AS GOOD AS ITS



It may surprise you how the Model 100 divvies out its power supply. Presented here are some tips for getting the most out of your batteries.

By Larry Berg

Since I'm in the memory-expansion manufacturing business, I've had to know what effect our products have on the limited and precious battery power of the Model 100. In my quest, I've uncovered some interesting facts concerning the 100's use of this valued resource.

There's quite a dramatic difference in battery drain depending on the circumstances. Methods on how to avoid unnecessary battery drain, prolong battery life, what to worry about, and

what not to worry about are covered in this article.

CURRENT BASICS. The electrical current a device uses can be measured with a meter called an amp meter. The electrical current required to run today's portable computers is so small it can't be measured in amps. It has to be measured in milliamps (1/1000 amp), and sometimes even microamps (1/1000000 amp). Fortunately you don't need a degree in electronics to understand

your monthly electric bill, nor dead batteries in your Model 100.

The Model 100, Olivetti M10, or NEC 8201 contains two types of batteries. The primary source of power is from four AA-sized batteries, used to operate the machine. The other battery is a small internal nicad which handles memory backup when the main batteries are low or removed.

Some people believe the internal nicads extend the operation of the computer when the AA batteries die.

continued on page 42

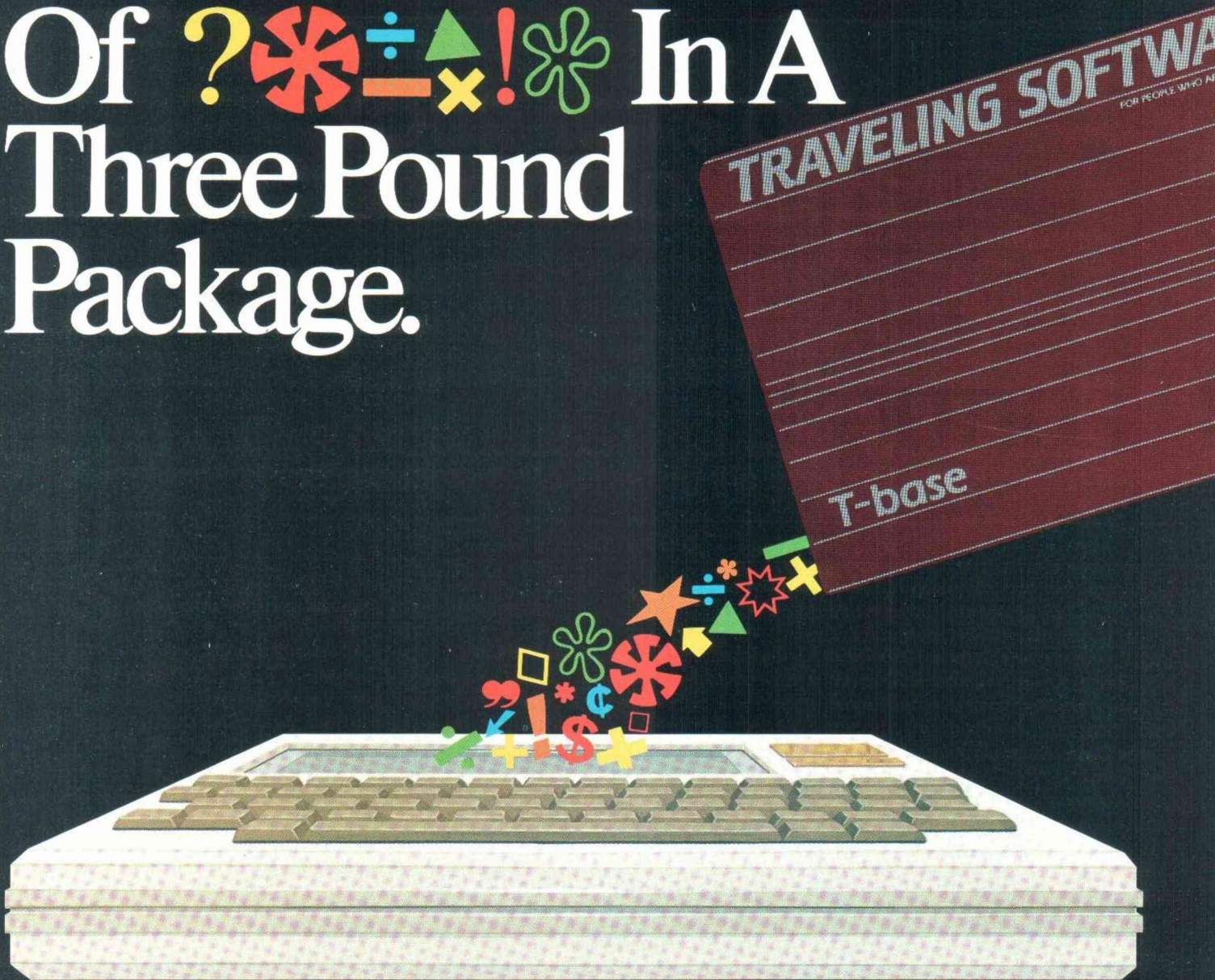
TEST RESULTS

BATTERY DRAIN OPERATION

53 - 55	Normal operation, power switch is on, menu is being displayed, no other activity. Program execution has no effect (exceptions below).
approx. 60	As above with speaker operating. Beep or Tone or Basic command.
100 - 110	Normal operation with cassette operating via CLOAD/CSAVE or other operation that causes the cassette motor to run. This high current is probably due to the activation of a relay which controls the cassette motor (on-off).
110 - 150	Normal operation with Telcom dialing active. Again probably due to the activation of a relay to pulse-dial the telephone. Higher than a continuous activation, like the tape motor, because a relay requires more current to pull closed than to stay closed.
0 - .5	Power off condition via the power switch. Some power is used even when the machine is off because the internal nicad battery is charged continually by the AA batteries. The current drain varies depending on the condition of the internal nicad.
1.3	Power off condition via program control. When the Model 100 is turned off by either a power off Basic command or the automatic power-off time-out, this is the reading. This one I can't explain. Perhaps something is kept active for some reason. Regardless, even while the machine is in this off condition, when the power switch is turned off, the current drain drops from 1.3 to the 0-0.5 range where it should be. If the power switch remains on, so does the 1.3 milliamp drain on the AA batteries.

Table 1. Test Results. The numbers on the left represent the electrical current drain on the four AA batteries during a particular mode of operation. The battery drain is measured in milliamps. To the right is a brief description of the operation being performed at the time of the measurement.

How To Put Ten Pounds Of ? * ÷ ▲ ! * In A Three Pound Package.



"Cramming the complexity of a relational data base manager into a portable computer . . . may seem ambitious . . . Yet Traveling Software's T-base handles the challenge with surprising grace . . ."

— *INFOWORLD*, DECEMBER 10, 1984.

"And make no mistake about it. T-base is one of the most powerful programs you can get for the Model 100 today."

— *PORTABLE 100*, OCTOBER, 1984.

" . . . T-base stands head and shoulders above the others I have seen so far . . . Awesome!"

— *PROFESSIONAL COMPUTING MANAGEMENT (PCM)*, JUNE 1984.

Model 200 Introduction Special

Receive the acclaimed Traveling Writer (T-Writer) for only \$19.95 (a \$49.95 value) with any purchase of T-base (\$99.95) before April 1st, 1984.

*Traveling Software products are now available at all Radio Shack stores through the Express Order Program.

Simply put, T-base is the most important software ever written for your notebook computer. And because of its condensed format and broad data capabilities, your 3 pound package can do more than even you probably expect. T-base — it beats the ? * ÷ ▲ ! * out of the competition.

Other great Traveling Software programs: The Traveling Appointment Manager, Expense Manager, Time Manager, Sales Manager and Project Manager, plus The Traveling Writer.



Call now for the dealer nearest you

Traveling Software, Inc.
11050 Fifth Avenue, N.E.
Seattle, WA 98125

1-800-343-8080

* Look for Traveling Software available for other lap-size computers.

55 ON READER SERVICE CARD

"A man on the beat
who is jotting down
notes or filling out
a form is carrying
... information that
could be ... vital ..."

100 HELPS ST. PETE COPS BEAT THE PAPERWORK BLUES

By JIM LAMB

At the end of the long arm of the law in St. Petersburg, FL, is the Model 100. And if a pilot program in that sun-coast city continues with the vigorous success it's maintained since April, 1984, it won't be long before cops on the beat across the country add new phrases to their vocabularies. Lingo like *modem*, *enter*, and *printout* will roll off their tongues with the ease of such classics as *book 'em*, *10-4*, and *just the facts, ma'am*.

When they do, you can thank the St. Petersburg Police Department, Radio Shack's mighty mite, and a clean-cut, neat dressing, soft-talking law enforcement man by the name of Sgt. Maurice Q. McGough.

WITH CONSIDERABLE EFFORT. But before you do, there are some things you should realize to understand why and how a portable computer fits into the government-issue world of shield, sidearms, patrol cars, and uniforms.

Television shoot 'em up, chase 'em 'round, men-in-blue shows depict policemen and policewomen as an on-the-run, occasionally having fun, catch-the-bad guys group. But ask the real world policeperson on the beat what's happening, and he or she will tell you that law

enforcement is often a tedious, deliberate, time-consuming routine of making rounds, answering calls, and following through ... and don't forget the paperwork.

Every minute someone in law enforcement scrawls through the clipboard jungle is a minute away from the beat — a minute the bad guys have to do their devious deeds undisturbed.

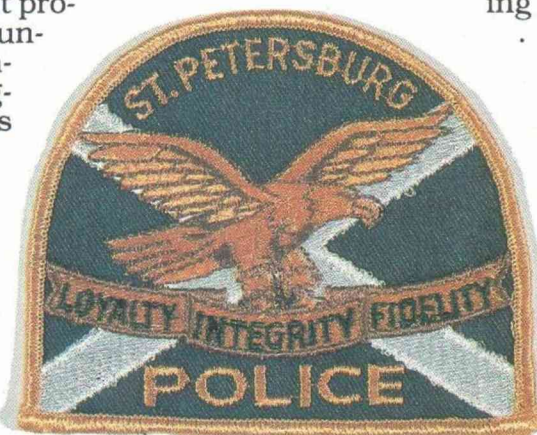
PAPER STRANGULATION.

The avalanche of forms shuffled through law enforcement offices is often of the one-size-fits-all variety.

The problem is, these forms don't fit everything. A form useful for reporting a stolen bike is usually lousy for filing a missing person's report. So a policeman filling out such a form might not find enough room in one block and too much room in another. It's hardly conducive to gathering in-depth information.

A man on the beat jotting down notes or filling out a form is carrying around information that could be statistically vital to other investigations. Often, though, it's hours before he can get that data back to the office and days before it can be passed along to other investigators and law enforcement agencies.

In the process of writing and rewriting, and filing and refiling, time isn't the only thing lost. Sometimes information — the key of any in-





	1	2	3	4
	January	February	March	
Labor	2134.7	1679.67	1258.84	
Materials	5946.87	4782.25	2371.48	
Total	8081.57	6461.92	3630.32	
SALES	23789.56	27652.68	36456.82	
Net Prof	15707.99	21190.76	32826.5	

Meeting with J.P. 3:00 19th Fl.

A NEW STAR IS BORN

Out of Radio Shack's Famed Model 100 Evolves the Advanced Technology Tandy 200

Our new Tandy 200 portable computer does what no other computer could.

It takes our amazing Model 100 one step further.



And like the Model 100, the new Tandy 200 proudly carries our Advanced Technology symbol, your assurance that the Tandy 200 includes state-of-the-art features and performance at an unmatched price.

The Next Generation of Portable Computing

The Tandy 200 represents the start of a true second generation in portable computers, with new built-in software, improved features, a bigger screen and a larger memory. All designed to make the Tandy 200 a more potent portable problem-solver.

For complex spreadsheet analysis and calculations, we put popular Multiplan software into the Tandy 200's permanent memory. Just turn on your portable Tandy 200, press a button and you've got a powerful decision-support tool at your fingertips. Now it's easier than ever to do sales forecasts, profit and loss projections, budgeting, pricing, engineering calculations and more.

Improved Word Processing Software

An improved version of the Model 100's easy-to-use word processing program makes the

Tandy 200 especially useful for journalists, students and anyone who needs to write letter-perfect memos, reports and correspondence in a hurry. Edit, delete and move blocks of text with the touch of a function key. It's that easy. The portable Tandy 200 computer gives you the convenience of a personal word processor for use anytime, anywhere.

Four other "instant-on" programs let you use the Tandy 200 as your personal appointment calendar, address and phone directory, and telephone auto-dialer (the Tandy 200 generates tone dialing pulses, so you can use it with long-distance services). A much more powerful built-in program for communications makes it easy to access other computers by phone. You can program in BASIC, too.

A Bigger Screen and a Larger Memory

The Tandy 200's new flip-up liquid crystal display has 240 x 128 resolution for big, clear graphics and easy-to-read characters. The 16-line by 40-character display makes the Tandy 200 particularly well suited to word processing and spreadsheet duties and with simple BASIC commands you can add dot-addressable graphics to your text.

To take advantage of the Tandy 200's new capabilities, we increased the standard memory size to 24,000 characters. Additional 24K expansion

modules let you increase the memory up to 72K, in banks of 24 each.

The Best in Technology for Under \$1000

Whether you're a student, scientist, busy professional or home computer user, the Tandy 200 is a smart investment. Best of all, the Tandy 200 has parallel printer, RS-232C, cassette and bar code reader interfaces for added versatility. You can even add disk storage and a monitor for a complete desktop system.

And you can start with the powerful software and impressive capabilities of the Tandy 200 (26-3860) today for just \$999.

See It Today

Get a hands-on demonstration of the Tandy 200 at any Radio Shack Computer Center or participating Radio Shack store or dealer.

Available at over 1200
Radio Shack Computer Centers and at
participating Radio Shack stores and dealers

Radio Shack®
The Technology Store™

A DIVISION OF TANDY CORPORATION

New 1985 Computer Catalog. Send Me a Copy.

Mail To: Radio Shack, Dept. 85-A-871
300 One Tandy Center, Fort Worth, Texas 76102

Name _____
Address _____
City _____
State _____ Zip _____
Telephone _____

Prices apply at Radio Shack Computer Centers
and at participating Radio Shack stores and dealers.

46 ON READER SERVICE CARD

ST. PETE P.D.

vestigation — is fumbled in the shuffle. Score one for the bad guys.

NOTHING BUT THE FACTS.

These considerations, however, weren't lost on Sgt. Maurice Q. McGough, a 14-year veteran of the St. Petersburg Police Department. McGough knew there were problems with processing information from police reports, but he didn't have a solution until he discovered the Model 100.

McGough has had a long-time interest in computers. (He said it "seems like forever.") His first encounter was in college, but it wasn't pleasant. He left with a microchip on his shoulder because of what he called a

"I think it was the first portable computer to have a large enough memory, built-in programs, and a big enough screen."

negative "punch card experience" dealing with "tons of paper telling you how bad you were." Then about three years ago he bought a small computer system which he used for addressing and bookkeeping. He also started "fooling around with programs."

The it happened, the *it* he'd been looking for to bring the patrolman on the beat into the whiz-bang-zap computer age, the Model 100.

"I think it was the first portable computer to have a large enough memory, built-in programs, and a big enough screen," was the way

he put it. And so the Police Portable Computer Project (PPCP) was born.

LOVE AT FIRST BYTE. "To appreciate (the Model 100)

with whiteout and correction tape while saying, "Go ahead punk, make my day — right after I get this form filled out."

Paperwork was, in the pre-



Officer Jane Bellet demonstrates the Model 100 to Officer Donnie Williams. This cradled position is preferred by most patrol officers.

you have to understand how much we hate to do police reports," McGough said.

Why? Why indeed. Imagine Dirty Harry fiddling

100 days "a tedious chore," McGough said. One problem, he explained, was the limitation of the generic police report: a four page, two-

ST. PETE P.D.

dimensional, Rubik's cube of squares, lines, and words that never seemed to have the needed space in the right place. No such problem with the copyrighted electronic-

report about a stolen bike, he simply chooses the stolen property caption and goes from there. The computer asks questions and the officer responds by punching

said. "We can put more information in less space and make it legible." Plus, the officer can juggle a number of reports at once.

"Go ahead
punk, make my
day — right after
I get this form
filled out."

"The chief advantage is that you have the ability to go back into the report and edit, insert, delete, and reorganize." That opens up another advantage "because it's relatively easy to do and they are more likely to write a complete report," McGough analyzed.

... officers whose reports used to end up on the skimpy side now are meatier while those who used to produce reports too wordy are now writing tighter and shorter.

EQUAL FOOTING. This ease of use has produced a paradox McGough has yet to fully explain. It seems that officers whose reports used to end up on the skimpy side now are meatier while those who used to produce reports too wordy are now writing tighter and shorter. He speculates that the structured report program, his electronic form, may be putting the officers on an equal footing.

form software developed by McGough.

BIKE CAPER. For example, if an officer has to fill out a

in the information — there's virtually no space limitation.

"We're asking for considerably more information than on a paper report," McGough





ALL AIRLINES DEPART FROM THIS TERMINAL.

**Presenting TravelshopperSM
...new from CompuServe
and TWA.**

Now you can save time and money by getting information and reservations on virtually any flight on any airline—worldwide—from one source. It's TWA's new Travelshopper, available now through CompuServe's Information Service.

With Travelshopper, you can scan flight availabilities, discover airfare bargains and order tickets...on your own personal computer...at home or in the office.

You also receive automatic membership in TWA's Frequent Flight BonusSM program. And you can build bonus points by staying at Marriott and Hilton hotels and by using Hertz Rent-A-Car.

Besides Travelshopper, CompuServe offers an ever-growing list of other travel-oriented on-line services.

The Official Airline Guide Electronic Edition lists direct and connecting flight schedules for over 700 airlines worldwide plus over 500,000 North American fares.

Firstworld Travel offers worldwide travel advice and service.

Discover Orlando provides complete prices, hours and features on all of Central Florida's attractions and accommodations.

West Coast Travel offers travel information for the western states.

Pan Am's Travel Guide contains up-to-date information on immigration

and health requirements for most foreign countries.

And TravelVision[®] provides complete automotive information, including road maps and an expert, personalized routing service.

Let your travel plans really take off. Use Travelshopper and lots, lots more from CompuServe.

To buy a CompuServe Starter Kit, see your nearest computer dealer. To receive our informative brochure, or to order direct, call or write:

CompuServe

P.O. Box 20212, 5000 Arlington Centre Blvd.,
Columbus, Ohio 43220

1-800-848-8199

In Ohio, Call 1-614-457-0802

"The way the program is written can serve as an investigative aid," he said, "... informationally (you) ask for more but are able to put it on less paper ..."

Another thing: If the powers that be want to add or delete a segment of the report, McGough simply changes the program. In the old days such a switch would have meant reordering new forms, plus the cost-loss of tossing out the old ones.

ISSUE ORIENTED. One key to the department's success so far, McGough remarked, is that each person gets his or her own unit. "One of the things we did right was issue the computer to the man, just like his sidearm. He's going to take care of it."

Each officer is issued a computer, a carrying case, a manual, and a direct-connect cable. He called the one-man, one-unit unique because it enables an officer to keep track of his court schedule, names and descriptions of suspects, and maintain a list of banks and convenience stores on his beat. It also gives a policeman time with the unit at home to experiment and thus become a more proficient operator.

WOUNDED IN ACTION. Of course, there might be one slight disadvantage. When something goes wrong there's nobody else to blame — like the time an officer in hot pursuit had to hit the brakes in a hurry and the Model 100 on the front seat of the patrol car went flying. The result: the space bar was loosened. (There's talk in the department of developing a Model 100 holster to keep the portable safe in the event of such accidents.)

The only other mishap involved a 100 that was dropped on the sidewalk. It suffered a scuffed case and a

dent in the plastic, but it operated just fine.

Of the 56 units used by the St. Petersburg Police Department, only three have had to be replaced, but those weren't the result of operator error. They had faulty chips. "If it's not broken when we get it," explained McGough, "it's not likely to break."

RIGHT ON TARGET. The response from rookie and veteran officers has been positive. "It was very encouraging to see the older officers, those with close to a decade of experience and used to doing things 'the old way,' accept this thing the way they did," McGough said.

"You're going to get more information more easily . . . in less time and on less paper."

McGough and his department already are getting calls from law enforcement agencies in other parts of the country, including MD, VA, TX, and CA. They want to know more about his Model 100 experience.

A PARTNER AGAINST CRIME. Here's essentially what McGough tells those interested in putting the Model 100 on the police beat:

- You're going to get more information, more easily prepared in less time and on less paper.

- The information is going to be more legible and it's also going to be machine readable. By virtue of its being machine readable, the opportunity is there to reduce redundant data entry (typing in information more than once) and the cost associated with this redundancy (having to pay a second or third person

to type in that same information).

- Police officers are going to prefer to write police reports with a notebook-sized portable rather than with pen and paper.

Of course, there are other details, like the fact that McGough said his department maxed-out the Radio Shack Model 4 initially used to absorb all this information. Now patrol officers file reports — at the station and over the phone — into a Model 16.

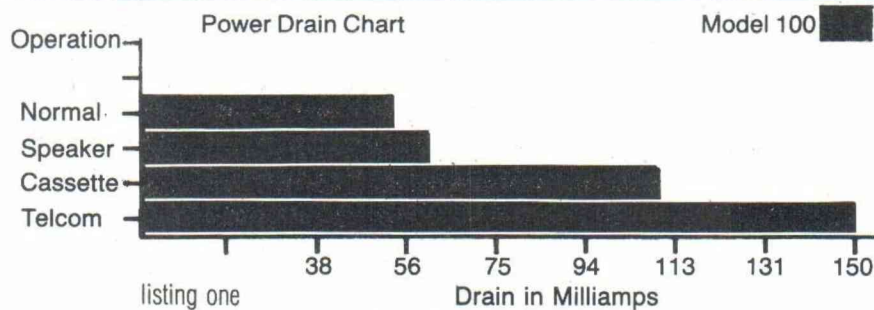
MAKING CRIME PAY. The Police Portable Computer Project didn't set taxpayers back a bundle. It was a case where crime did pay. "We have a fund in which we put confiscated drug money," McGough explained. "The City Council can appropriate money from that fund for different police activities and did so with this project."

Using the confiscated money meant the police department didn't have to wait for the next fiscal year to receive money for the unbudgeted project. "It's difficult to budget breakthroughs in technology," McGough observed.

"The bad guys don't have to write reports."

Is McGough worried that the bad guys might start using the Model 100 on the wrong side of the law? Hardly. "The bad guys don't have to write reports," he said wryly.

If you have to do reports, you can write McGough in care of the St. Petersburg Police Department, 1300 1st Ave. N., St. Petersburg, FL 33075. He says he'll be happy to answer any questions — but no bad guys, please. □



This is not true. The 3.6 volt nicad only provides standby power to the memory chips, and only when the AA batteries are low or removed.

TEST ENVIRONMENT. Only two Model 100s were tested. One was purchased mid-1983, the other early-1984. The meter used for measurements was a B+K Precision 2805 DMM. The room temperature was approximately 74 degrees Fahrenheit. (Temperature has a minimum effect on current requirements as does high humidity.)

The two test points were between the AA batteries and the main unit, and the nicad battery and the main unit. The tests performed, see chart, showed no significant variation between the two machines tested, enabling me to deduce this represents all Model 100s.

A 1.3 milliamp power drain on the batteries when the 100 is supposedly off surprised me.

TRICKLE DRAIN. A 1.3 milliamp power drain on the batteries when the 100 is supposedly off surprised me. From now on, I'll be checking the switch more often to insure it's off.

There isn't much you can do about the other battery drainage. However, it's helpful to know the nicad battery is being charged and drawing power from the AAs all the time. If the nicad were to become discharged it'd affect the life of the AA batteries.

When the low-battery light comes on and the AAs are replaced, it might be a good idea to hook up the AC adaptor for the first hour or so to insure the nicad is charged up. Otherwise the AA batteries will have to do an initial charge of the nicad battery.

Almost twice the power is used during cassette operation and telephone dialing. The activation of small relays inside take as much current as the rest of the computer. Now I'll look for an AC outlet whenever I have lots of files to load or save.

MEMORY DRAIN INEFFECTUAL. I began testing, to discover all these neat things, but instead found out what impact our 8K memory modules have on battery life. Here again I was surprised and happy to learn the memory modules have no measureable effect.

With 3.5 digits of accuracy, on the milliamp scale I couldn't find any currency difference between the basic 8K Model 100 and one fully expanded to 32K. I not only tested my company's parts, but those of other manufacturers. No difference. There are, perhaps, differences in the microamp ranges, but who cares. A microamp is 1000 times smaller than a milliamp, unmeasurable on the milliamp scale.

CAD OF A BATTERY. What about the nicad? The current drain on the nicad for a basic 8K Model 100 is approximately 27 microamps. The nicad only is used when the Model 100 is switched off and the AAs are removed or low. With the AAs removed and the AC adaptor hooked up, there's no charging of the nicad unless the power switch is on.

The nicad is just for memory back up and only used when needed to keep the memory alive. The battery is rated at 50,000 microamp hours. At a 27 microamp load, I estimate 77 days of power in the nicad.

STANDBY. All the 8K memory modules we tested used less than 2 microamps each in standby mode. The standby mode is a feature of the CMOS RAM

There are, perhaps, differences in the microamp ranges, but who cares. A microamp is 100 times smaller than a milliamp, unmeasurable on the milliamp scale.

memory chip. Each memory chip can be put in standby condition and while in this mode, memory can't be accessed (read or write) by the computer. When the computer is turned off, standby mode is turned on.

Standby current is much less than operational current and the standby voltage can be as low as 2.5 volts. Operational voltage should be more than 4.5 volts for the RAM to read and write correctly.

WHEN EXPANDED. With the basic 8K machine expanded to 32K (three memory modules added) I measured less than 33 microamps which translates to more than 63 days of backed up power in the nicad battery. There are a lot of variables that enter into the battery life equation and this is just one test. However, even if the actual number of days varies, I find the numbers useful, if for nothing else than to help put things into perspective.

What's 2 microamps more when the rest of the system draws 27 microamps? I understand why Radio Shack says in the manual that the nicad will "retain all information for about 30 days . . .", but I don't understand the next statement about 32K lasting for "... about 8 days."

The 30-days statement is all right, cut the number of days in half and play it safe. But 8 days for 32K? Radio Shack is either wrong, overly conservative, or someone wanted to leave the door open for a power hog RAM.

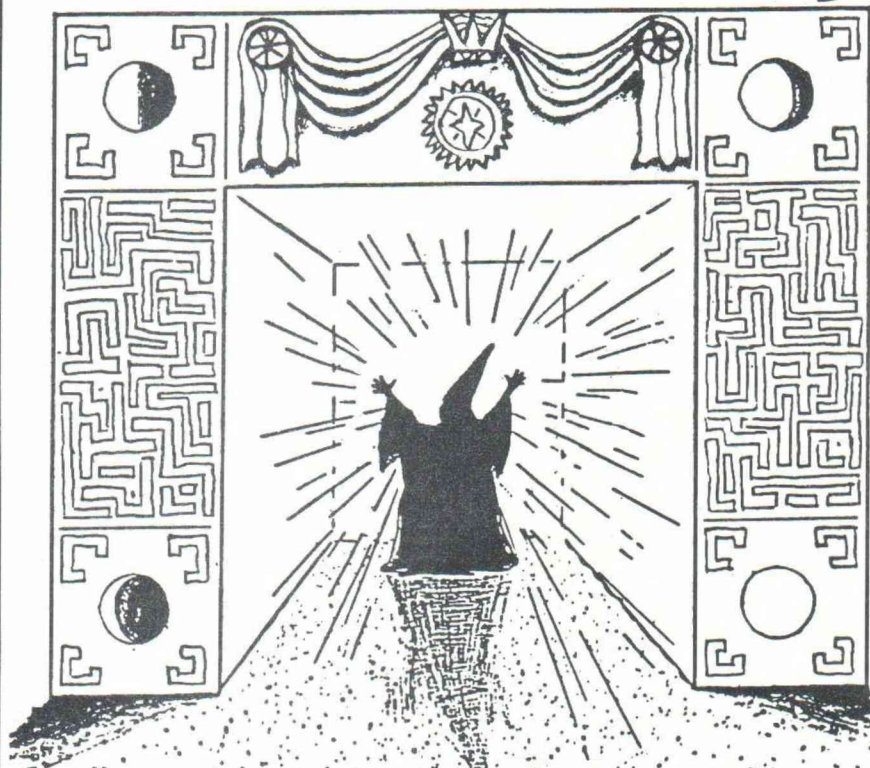
How long to charge up the nicad? It depends on many things, but overnight wouldn't hurt.

FEELING LOW? If you think your nicad is low because your AA batteries have been dead for a week or have been removed, you have three choices:

1. Install new AA batteries and let them charge up the nicad which may or may not drain much power;
2. Hook up the AC adaptor and turn the machine on. You also might want to disable the auto-power-off-time-out; or
3. Do both. Put new AA batteries in and hook up the AC adaptor, with or without the power switch on.

The power adaptor removes the load from the AA batteries which are charging the nicad. How long to charge up the nicad? It depends on many things, but overnight wouldn't hurt. □

PORTAL OF LIGHT



Long, long ago in a land far away, you were born (in a previous life) as the only child of King Gabrial, beloved ruler of Fortonnia. Your birth was viewed as a great threat to the forces of evil which lurked in the land.

The evil wizard Fondu personified these forces of evil, and he battled to undo the good works of King Gabrial, your father. During your childhood, you were watched by Fondu and his henchmen, who waited for their opportunity.

As you approached your thirteenth birthday, plans were laid by the evil ones to prevent you from ever assuming the throne. They could not kill you — your life force had already grown too strong ...

But they had at their disposal something far worse than death! The infamous and legendary mountain city of Labyrinthia was their domain. Hidden deep in the mountains of Fortonnia, no mortal had ever escaped from its walls.

Labyrinthia consisted of seemingly endless mazes, level upon level, going ever deeper into the mountain of evil. All but the first level of the city was inhabited by fearsome creatures who attacked mortals with no provocation.

The evil ones, with their warped sense of humor, found it amusing to give imprisoned mortals the impression there was some chance of escape. They provided their victims with sources of food, water, and weapons — all the time laughing.

It was this unspeakable fate which Fondu had in mind for you as he watched all of those years. And on your 13th birthday it happened ...

Step into the most unforgettable adventure you've ever played! Incredible 3-D viewport clearly shows the way, while your travels are meticulously mapped out on the left of your screen. Build your character's strength as he battles his way through the city, collecting treasures along the way with which you can buy food, water, and more powerful weapons. Each city has 250 levels, with no two cities the same. Save feature allows you to save the city you're in for continued play.



Rochelle Building
Department P1
P.O. Box 1157
Elizabeth City, NC 27909
(919) 338-3202
CIS EMAIL: 75735, 1440

PORTAL OF LIGHT
STOCK NO. ASG - 215

\$39.95

Plus \$2.00 shipping
NC Residents Add
4.5% Sales Tax

☐ CHECK/M.O. ENCLOSED

CHECK PAYMENT TYPE:

☐ VISA

☐ MASTERCARD

SIGNATURE _____ CARD NO. _____ EXP. DATE _____

NAME _____ COMPANY _____ STREET _____

CITY _____ STATE (PROV.) _____ ZIP _____ PHONE _____

SYSTEM REQUIREMENTS:
MODEL 100 WITH 24K RAM
DEALER INQUIRIES WELCOME

Portal of Light & Alpine Data Systems, Inc.
are trademarks of Alpine Data Systems, Inc.
©1984 Alpine Data Systems, Inc.

MULTIPLAN PUTS PLENTY OF WHAT IF POWER INTO YOUR 100/200

By William T. Walters

1	Stock	TAN	BLTA	FOLNE
2	Cost	22.75	14	12.75
3	Quantity	100	200	300
4	Invested	2275.00	2800.00	3825.00
5	Mkt Value	24.00	15	13.75
6	Tot Value	2400.00	3000.00	4125.00
7	Tot Gain	125.00	200.00	300.00
8	% Incr	5.4945	7.1429	7.8431
9	Port Tot	13675.00		
10	Port Val	14600.00		
11	FORMULA:	=R[-1]C+R[-4]C		
12	END			
13	3200 Mute			

Here the option command (F6) has been selected. The 15th line displays the formula. Line 16 lets you use the function keys to select automatic or manual recalculation and to beep or mute for errors.

Long, long ago, in a set of towers overlooking the vast domain of Tandy-land, a fair-haired, bespectacled young prince told a small band around him: "F'sure, pahdners, we can put Multiplan on the li'l ol' 100." Why, he said it as easily as if he were to merely slay another dragon!

And the people who lived in the high towers agreed that a true spreadsheet for the little computer would be a very big and very good idea. So they cheered, "Hooray, and please hurry!" Whereupon handsome Prince William the Gates flew, on Microsoft wings, back to his Pacific Northwest domain.

And the Great Wait began.

That was over two years ago, but patience is a virtue, and thankfully the wait is almost over. I have been using a sample of Microsoft's Multiplan on the Model 100 for over two months, and it is impressive.

For the 100, it consists of a separate 32K ROM which should be available from Radio Shack computer centers by March or April at a cost of \$149.95.

The Tandy 200 comes with Multiplan already installed. Both versions are

identical with the exception of the smaller display size on the 100.

Although, much has been written about Multiplan and various other spreadsheets, there isn't much that has been said about the powers and virtues of computerized spreadsheet planning for those who need it. Surprisingly enough, almost anyone can benefit by exploring various financial alternatives through a spreadsheet model. Granted, some exercises are trivial and could be solved faster with pencil, paper, and any four-function calculator. Others however, are more complex and to work through them more than one time is usually more than anyone can stand.

TAX FIGURING. Take income taxes for example. Which is best for you: filing jointly with two IRA's, filing singly with only one IRA, or both examples, with and without an IRA? I can't speak for anyone else, but I never worked through and examined various tax options before I had created a tax model in Multiplan. I also didn't keep up with my investments as thoroughly as I should have.

Now, with a model of my investments in a Multiplan spreadsheet, I have them with me wherever I go. And I keep the phone number of my broker handy too. No sense being unprepared.

The Model 100 version of Multiplan comes on a read only memory (ROM) circuit ready to be plugged into the bottom of your unit. Installation requires the user to insert the chip into the keyed socket (it will only fit one way) and enter a short BASIC program to cause Multiplan to execute:

10 CALL 63012

Stu Weinstock, Tandy buyer for the 100/200 says there are two more ways besides the above program: 1. use cursor at main menu to point to multiplan

It's a built-in feature on the Tandy 200 and a ROM snap-on for the Model 100. And it gives you lots of useful spreadsheet analysis capability.

file; and 2. perform a cold restart on the 100 to put MSPLAN on the menu as a built-in file.

The first worked like a charm. I was asked: File to Use?, and responded accordingly. I exited Multiplan back to my Multiplan file and pressed enter. Sure enough. Up came Multiplan with my spreadsheet ready to go.

Okay, time for full reset. Oops? Where is MSPLAN? Oh well, two out of three isn't bad. It's a shame it didn't work that way though, since the Portable Computer Support Group, and others, seems to have figured a way to do it. On the Tandy 200, Multiplan appears properly on the main menu as MSPLAN.

FIRING UP. When Multiplan is first executed, the screen blanks then displays a copyright notice and asks you to name a file in the lower left corner. You need to type in a name using up to six letters. The file type is automatically set to type CO which indicates that it is a machine language type file.

After answering with the filename, the screen will clear again and display four columns and seven rows (15 rows on the Tandy 200). Pressing LABEL will cause the commands that are associated with the function keys to overlay the last row of the display.

MULTIPLAN COMMANDS

Table One

Command key assignments:

BREAK — stops execution of current command.
 LABEL — displays commands assigned to each function key.
 PASTE — inserts one or more blank rows or columns.
 PRINT — prints contents of LCD.
 <SHIFT>+PRINT — allows printing of all or portion of worksheet.

function summary

ABS(n)	AND(list)	ATAN(n)	AVERAGE(list)
COLUMN()	COS(n)	COUNT(list)	EXP(n)
FALSE()	IF(logical,Then value,Else value)		
INDEX(area,subscripts)	INT(n)	ISERROR(value)	ISNA(value)
LN(n)	LOG10(n)	LOOKUP(n,table)	MAX(list)
MIN(list)	MOD(dividend,divisor)	NA()	
NOT(logical)	NPV(rate,list)	OR(list)	PI()
ROUND(n,digits)	ROW()	SIGN(n)	SIN(n)
SORT(n)	STDEV(list)	SUM(list)	TAN(n)
TRUE()			

Function key assignments:

<F1>EDIT — allows editing of the contents of current cell.
 <F2>BLNK — replaces specified cells with blanks.
 <F3>COPY — allows copying of cells. Right, Down and From.
 <F4>FORM — alters width of all cells or formats cell or group of cells. Left, Right, Centered, Fixed number of decimals, General Format or Money (2 decimals with leading dollar sign).
 <F5>NAME — named reference to cell or group of cells.
 <F6>OPT — selects user options of automatic recalculate, manual recalculate, beep on errors, or no beep on errors.
 <F7>TRAN — Transfer command to allow Loading or Saving of files to/from cassette or disk in normal or SYLK format.
 <F8>MENU — saves worksheet in RAM and returns to main menu.

Table one has a complete listing of all commands with secondary options as well as all functions that are implemented.

Now! Get real word processing power with
The amazing **LAPSTAR** Word processor
that lets your TRS-80 Model 100 display a full
60 columns x 10 lines
on screen AND uses WORDSTAR* like commands!

CISS
CORP

P.O. Box 27855
St. Louis, MO. 63146

ONLY
\$74.95

For complete information send business sized S.A.S.E.

*Wordstar is a trademark of Micro-Pro inc.

10 ON READER SERVICE CARD

3620 ~ 244 Street, Langley, BC. V3A 4P6 Telephone 604-856-8858

Hardware, Software, Accessories

No more hassles with customs clearance

Write or phone for free price list

VISA ~ Master Charge

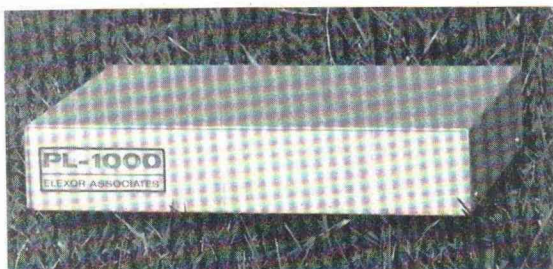
A service for Canadian users of:
TRS Model 100, Olivetti M10, NEC PC8201A

Canada Portable Computer

9 ON READER SERVICE CARD

DATA ACQUISITION & CONTROL

The most versatile and cost-effective "REAL-WORLD INTERFACE" for your personal computer. Our systems give you complete Analog and Digital I/O capabilities. Measure temperature, pressure, flow, weight, etc. Whether in the lab or in the field, Data Acquisition and Process Control are now easier than ever. Systems from \$549. Call the factory.



- **EXPANDABLE**
- **TRULY PORTABLE**
- **BATTERY OPTION**
- **BUILT-IN BASIC**
- **NON-VOLATILE MEM**
- **STAND ALONE ABILITY**

RS-232 interface connects to a terminal or any computer. Accepts commands from any language (BASIC, C, etc.) Standard system: 16 ch. 12 bit A/D, 2 ch. D/A, 32 bits DIGITAL I/O. Chassis can hold 2 additional boards. Expansion boards: Digital I/O, A/D, timer/counter, triac, opto-isolator, relay, etc. Direct bus connection for many computers (Epson Geneva, TRS Model 100, NEC.)

ELEXOR
ASSOCIATES

(201) 299-1615
P.O. Box 246,
Morris Plains, NJ 07950

24 ON READER SERVICE CARD

MULTIPLAN

Since I had some Multiplan worksheets already built in my Model 4, I decided to test the capability of exchanging data between several machines.

On my Model 4 I executed Multiplan, loaded the worksheet, and saved it on disk as a special type of file called SYLK (SYmbolic LinK).

Microsoft . . . lets
unused elements
occupy very
little space.

This creates an ASCII file which can be sent or received over standard communications links, either directly thru the RS232 port with a null modem or by modem and the phone lines. As with any direct communications, it's extremely important that the same communications settings be used. Once you get over that the rest is fairly easy.

Table two has full instructions for linkage between Model II/12 or Model 4 and either the Tandy 200 or Model 100 computers.

None of these
omissions is critical,
but it makes an
otherwise excellent
product simply
a good one.

LIMITED SIZE. Both versions of Multiplan are restricted to 63 columns by 99 rows for an individual worksheet. But you'll never create a full 63-column by 99-line worksheet. There isn't enough memory in either machine to do it. In fact, 36-by-36 is about the practical limit in a Model 100 with no other files existing. If that worksheet has each element filled, there will be less than 500 bytes left.

The Tandy 200 will have even less capacity. Often though, each cell isn't used. We tend to spread the individual elements out to make the information more readable.

Microsoft has used that knowledge and lets unused elements occupy very little space. Just because you want to extend your worksheet to more than 36-by-36 (unless you are planning to fill every element) you probably won't be disappointed.

MULTIPLAN

	1	2	3	4
1	Stock	BLTA	FDLNB	
2	Cost	22.75	14	12.75
3	Quantity	100	200	300
4	Invested	2275.00	2800.00	3825.00
5				
6	Mkt Value	24.00	15	13.75
7	Tot Value	2400.00	3000.00	4125.00

= 1 =

= 2 =

= 3 =

= 4 =

= 5 =

= 6 =

= 7 =

= 8 =

Multiplan's worksheet on the Model 100. The function key labels are not displayed.

Each version of Multiplan also provides a video capability through the optional Disk-Video interface (DVI). There are, however, some differences in the capability that is provided between the 100 and 200. As the photos illustrate, the Tandy 200 version of Multiplan will make full use of the video display.

If you are in 80-column mode, you will see a full 80 columns by 25 lines. Not so in the Model 100 version. It is restricted to 8 lines of 40 columns, no matter what the capability of the video display that is connected to it. That's a real disappointment but according to a spokesman at Microsoft, it's the best that could be done.

There are also elements of Multiplan that larger desktop machines take for granted. They don't make sense for a portable version so are not implemented. These are windows (pretty silly on an 8 x 40 LCD), reverse video borders, external linkage, sorting, and iterative solutions.

Some missing features which do matter are locking cells; capability to delete a cell, row, or column entirely; and the ability to print the worksheet formulas. None of these omissions is critical, but it makes an otherwise excellent product simply a good one.

SUBSTANTIAL VALUE. Multiplan, as implemented on the Model 100 and Tandy 200, provides a substantial value to the user who needs a good spreadsheet capability. There are shortcomings on both implementations. The Model 100 version is more restrictive due to its handling of the DVI.

It's impossible to load or save a worksheet to any device other than cassette or disk with the transfer command. One can't create a base worksheet, load it into Multiplan, modify it as needed, and cause it to be saved into working RAM under another name.

It is likewise impossible to load or save SYLK files to communications line. They only go to RAM. If a SYLK file can be saved to RAM, why not a standard worksheet file? And why can't SYLK files be saved to cassette or disk?

The capability to delete a cell or group of cells is the most glaring missing element. It can be worked around but it is inconvenient.

STRONG POINTS. The strong points lie in standard commands and functions that perform almost identically to the bigger Multiplans. If you have used Multiplan before, this will make you feel right at home. In fact, the only thing you will have to get used to is placing an equal sign before entering a formula. Otherwise, 100/200 Multiplan thinks you are entering text.

Table Two

Transmitting SYLK files between the Model 4 and Models 100/200 via RS232 port at 9600 baud.

MODEL 4

1. Boot then load & execute Multiplan.
2. Load in desired file:
TL filename
3. Set SYLK as transfer option:
TOS
4. Save file back to disk in SYLK format:
TS filename/SLK
(be sure to add /SLK for extension to avoid confusion)
5. Exit Multiplan:
QY
6. At TRSDOS Ready type:
SET *CL to COM/DVR <ENTER>
SETCOM (BAUD=9600) <ENTER>
COMM *CL <ENTER>

MODEL 100/200

7. Connect 100/200 via RS 232 and null-modem cable
8. Enter TELCOM and use STAT key to select proper baud rate:
<F3>87E1E <ENTER>

ADDRESSER

No labels! Personalized, easy to use.

Addresses business & personal letter heads, long & short envelopes, with an option to skip return address.

Uses addresses stored in "ADRS. DO" file.

\$10.00

SPELLER

Corrects spelling & typographical errors of "TEXT. DO" files.

\$40.00

PSYCHI

An expert which writes psychiatric evaluations

\$50.00

All programs come on cassettes with documentation.

SOFTMATE

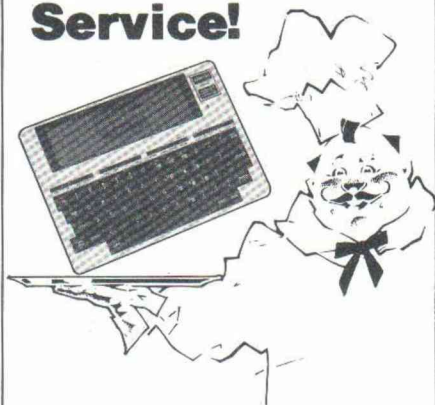
P.O. Box 15157

Portland, OR 97215-9998

(503) 238-1490

53 ON READER SERVICE CARD

Southern-fried Service!



For technical expertise and service that's faster than butter melting on a mess o' grits, you can't beat the "Delker Difference."

We're not just whistlin' Dixie. When it comes to TRS-80 computers, we mean serious business.

Y'all write or call:



DELKER ELECTRONICS, INC.
P.O. Box 897
Dept. P1
408C Nissan Blvd.
Smyrna, TN 37167
800-251-5008
800-545-2502 (Tennessee)
615-459-2636 (Tennessee)
615-254-0088 (Nashville)

MULTIPLAN

table two (continued)

9. Select TERM:
<F4>
10. Select "Download" and enter filename desired to receive:
<F2> filename <ENTER>
11. <CLEAR> <*>
<CLEAR> <:>
<CLEAR> <5>
<CLEAR> <9>
answer file to send question with filename/SLK that you had saved from Multiplan.
12. When sending is complete
<CLEAR> <5>
<CLEAR> <->
<CLEAR> <5>
<CLEAR> <0>
13. Press <F2> to complete download
14. Exit TERM & TELCOM
15. Enter Multiplan
16. Load file with transfer load function, selecting SYLK for desired load format:
<F7><F2><F3>filename
<ENTER>

If an error occurs loading the file that was saved in the Model 100/200, exit Multiplan, enter the .DO file and remove any extra carriage returns at the beginning or end of the file. See sample SYLK file in listing 1.

For the Model II/12 user, simply follow the same general outline provided above, with the following steps replacing the appropriate Model 4 steps.

MODEL II/12

Steps 1-5 remain the same

6. At TRSDOS Ready:
SETCOM A={9600,7,E,1}<ENTER>

Model II/12

7. Enter TERMINAL program (provided on original system diskette):
TERMINAL <ENTER>

8. Load /SLK file previously saved:
<G>filename /SLK

Now connect 100/200 per steps 7 thru 10

11. Transmit file from TERMINAL buffer to connected 100/200:
<X><ENTER>

When transmission is complete close the Download on the 100/200 per step 13. You may ignore further instructions about closing the Model 4 file. The Model II/12 already accomplished it.

MULTIPLAN

The documentation that comes with the package is very good and in the newer Microsoft style. Missing is information on how to get Multiplan to execute. But again, Stu Weinstock has said that it would be included in an addendum to the manual.

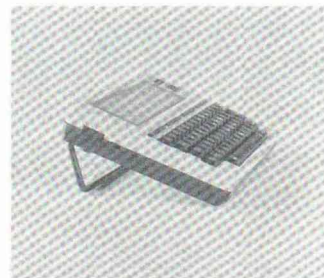
I'd rate the Multiplan option for the 100 and that built into the Tandy 200 a solid 8.5 on a 10-point scale. ☐

listing one

```
ID:PMP
F:DG4R9
B:Y14;X6
NN;NInvested;ER4
NN;NTotLValue;ER7
NN;NTotLGain;ER8
NN;NPortTot;ER12
NN;NPortVal;ER13
C:Y1;X1;K"Stock"
F:FG2R
C:X2;K"TAN"
F:FG2C
C:X3;K"BLTA"
F:FG2C
C:X4;K"FDLNB"
F:FG2C
C:X5;K"KRUE"
F:FG2C
C:X6;K"LG"
F:FG2C
C:Y2;X1;K"Cost"
F:FG2R
C:X2;K22.75
F:FG2R
C:X3;K14
C:X4;K12.75
C:X5;K13.125
C:X6;K21.5
C:Y3;X1;K"Quantity"
F:FG2R
C:X2;K100
F:FG2R
C:X3;K200
C:X4;K300
C:X5;K200
C:X6;K100
C:Y4;X1;K"Invested"
F:FG2R
C:X2;ER[-1]C*R[-2]C;D;K2275
F:FF2R
C:X3;S;R4;C2;K2800
F:FF2R
C:X4;S;K3825
F:FF2R
C:X5;S;K2625
F:FF2R
C:X6;S;K2150
F:FF2R
C:Y6;X1;K"Mkt Value"
F:FG2R
C:X2;K24
F:FF2R
C:X3;K15 C;X4;K13.75
C:X5;K13.625
C:X6;K23.5
C:Y7;X1;K"Tot Value"
F:FG2R
C:X2;ER[-1]C*R[-4]C;D;K2400
F:FF2R
C:X3;S;R7;K3000
F:FF2R
C:X4;S;K4125
F:FF2R
C:X5;S;K2725
F:FF2R
C:X6;S;K2350
F:FF2R
C:Y8;X1;K"Tot Gain"
F:FG2R
C:X2;ER[-1]C*R[-4]C;D;K125
F:FF2R
C:X3;S;R8;K200
F:FF2R
C:X4;S;K300
F:FF2R
C:X5;S;K100
F:FF2R
C:X6;S;K200
F:FF2R
C:Y10;X1;K"% Incr"
F:FG2R
C:X2;E((TotGain)/Invested)*100;
D;K5.4945054945055
F:FF4R
C:X3;S;R10;K7.1428571428571
F:FF4R
C:X4;S;K7.8431372549019
F:FF4R
C:X5;S;K3.8095238095238
F:FF4R
C:X6;S;K9.3023255813953
F:FF4R
C:Y12;X1;K"Port Tot"
F:FG2L
C:X2;ESUM(Invested);K13675
F:FF2R
C:Y13;X1;K"Port Val"
F:FG2L
C:X2;ESUM(TotLValue);K14600
F:FF2R
C:Y14;X1;K"% Incr"
F:FG2L
C:X2;E((PortVal-PortTot)/PortTot)*100;
K6.7641681901279
F:FF4R
E
```

Currently an American Airlines pilot, Bill Walters was the buyer (project manager) at Tandy for the Model 100. As such he was closely involved with the development of the new Tandy 200 from conception to prototypical product. — Ed.

THE PORTA STAND



Improved Viewing Angle

Improved Typing Angle

PORTABLE - Can be carried in your MOD 100 pouch

VERSATILE - Can be used on lap or desktop.

For MOD 100 or NEC 8201

Send check or money order for \$12.95 plus \$2.00 shipping and handling to:

PORTA PRO
P.O. Box 15456, Denver, CO 80215
dealer inquiries invited

39 ON READER SERVICE CARD

8K RAM UPGRADE \$39

FREE Ram Test Software with order • ULTRA LOW POWER Cmos design does not block use of the expansion Rom space • Easy step by step installation instructions • 1 YEAR WARRANTY • MC, VISA, COD, MO ship same day • \$39 + \$2 or 3/\$110 + \$3 ship • WE SERVICE WHAT WE SELL • HOBBYIST SPECIAL: Bare bd & full doc \$15 + \$1.

ECONOMY
COMPUTER
CONCEPTS

BOX 2047
N. BABYLON, NY 11703



516-587-6947



23 ON READER SERVICE CARD

COME ON, WANNA CUT SOME MACHINE LANGUAGE BYTES ON THE MODEL 100?

COBUG IS A SIMPLIFIED BASIC ASSEMBLER
PROGRAM TO HELP YOU GET STARTED

BY RONALD F. BALONIS

Editor's Note: Due to space limitations, Cobug listing one has been cut. Portable 100/200 will make the listing available to its readers in two ways.

Readers can either obtain the listing by downloading the CompuServe public access file named COBUG.DO, or by sending a self-addressed stamped envelope to the magazine, attention COBUG Listing.

Do you remember when the only way to make your computer work was to toggle the program in, bit-by-bit and a byte at a time? When there was no ROM and very little RAM? I do, but only the memories of my successes remain. Machine language was all there was for many of us way back in 1976. Of course no one wants to go back to those days or ways, but machine language is still the root of all we do with computers.

Machine language programing is still the challenge it was. Now it's also a way to quench your desire for your computer to do old things faster and in new ways. It's a chance to experience that ultimate of programing highs, a working machine language program. And, as ever, to make small computers like the Model 100 act BIGGER.

Today's software makes software for us. With an assembler program, the task of machine language programing is easier and quicker. No longer do you have to toggle or poke hand-assembled and translated programs into memory. The machine can do it for you. And that's what the Cobug BASIC program is all about.

Cobug emulates the pencil, paper, and T-bug, debug, or toggle methods of translating and assembling of yesterday. It's not meant to be a "full-func-

tion" assembler, just a simple one for cutting machine-language bytes on the 100. It recognizes the 8085 microprocessor instructions listed in Cobug's instruction table, the assembler instructions (pseudo ops) of ORG, EXEC, BYTE, WORD, STRING, and decimal and ASCII constants.

The text editor is used to create a source program. Run Cobug to make the source program an object program in memory, then save it as a RAM or cassette file.

HOW IT WORKS. Cobug reads the source file, searches the opcode table for the object code and the symbol/label table for addresses. It then pokes the decimal code into the RAM to make the object code program. It is a two-pass assembler.

The first pass assigns values to the labels, tests for valid opcodes, and builds the symbol/label table. The second pass assembles the machine code to memory and tests the opcodes, labels, and constants. Syntax errors are flagged on both passes. And when both passes are error free, it tells you the START, END, and EXEC (execution) addresses for your program.

Cobug checks only for errors in syntax: opcode, operand, labels, constants, and pseudo ops. Logical errors are your responsibility. Lines with a syntax error are flagged by **ERR** during the assembly passes. But you must determine what the syntax error is. Use the text editor to fix it and run it through Cobug for another try. Proficiency comes with practice in this case. When you get through both passes without syntax errors the last screen tells you the program's addresses: START, END, and EXEC. Now either run it by calling the EXEC address, or save it as a RAM or CAS (cassette) file.

NOW TRY IT. Key in the program of listing one and make the DEMO.DO program (listing two) into a source text file, calling it DEMO.DO. Then assemble it, to see how Cobug works and also test it for errors at the same time.

First you must reserve memory for the object program that Cobug will make. Reserve memory by entering in BASIC: CLEAR 100, MAXRAM-960 (maximum memory available in RAM). That makes HIMEM (highest memory available) equal to 62,000. Run Cobug after a few seconds of initialization, it prompts for output on LCD, CRT, or LPT, and then, for the name of source file. With a source file on cassette, enter CAS:FILENAME or on disk, enter O:FILENAME. If it's in RAM, enter just the filename. Or exit to the menu by pressing ENTER at the prompt.

The assembler will make the first pass and flag lines with a syntax error in them. If there are any errors, it will not go to the second pass. They must be found and fixed: then you are ready to try again. If the source is on cassette, be sure to rewind it for the second pass. When both passes are error free, the final screen tells you the START, END, and EXEC addresses for the object program. Save it with the SAVEM command or run it by entering CALL nnnn (where nnnn is the execution address).

If Cobug tells you the object program addresses, enter CALL nnnn, to see the DEMO program work. Otherwise check your program against listing one for an error. If DEMO doesn't work, check your object against listing three, the DEMO's object code.

WE'RE IN LUCK. Programs in machine language are similar to programs in a high-level language in only one respect: they both solve the problem of how to motivate your computer to do



Our Batteries Take You Anywhere

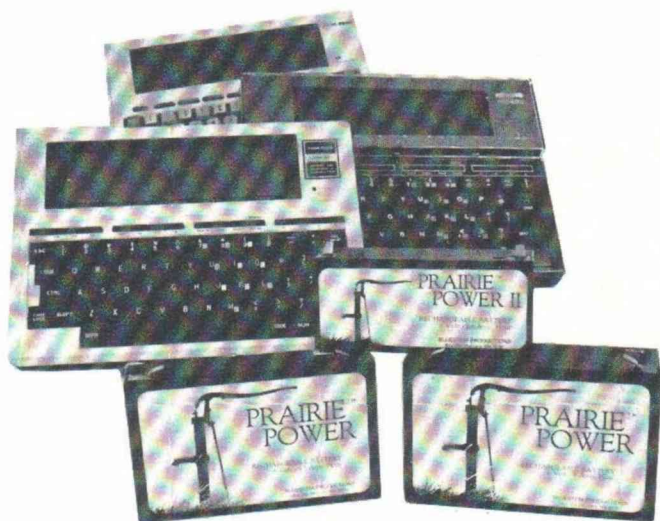
Whether you're writing your novel in the hills of Texas, your memoirs while sailing to Antiqua or just plain tired of spending time under your desk looking for outlets, PRAIRIE POWER batteries make "Briefcase Computing" a reality.

There's nothing complicated or expensive. Just plug one of our small units into the side of your Model 100, Olivetti M10 or NEC 8201A and forget about electricity. Gain dramatic savings over cost and computing time of AA's.

- PRAIRIE POWER is rechargeable
- Electrolyte immobilized technology
- Leak-proof and totally carefree
- 5' cable included
- Fits into standard cases
- Universal charger available
- For any 6-Volt applications such as radios, recorders, etc.
- Choose weight and battery size appropriate to your needs
- 24-hour ordering
- No memory like Nicads
- Not gelled-cells

SPECIFICATIONS

Size	Rating	Weight	Dimensions
8 amp. hr.	160 hrs. (32K)	3.6 lbs.	6x3.75x2
5.5 amp. hr.	100 hrs. "	2.7 lbs.	6x3.7x1.3
2.6 amp. hr.	54 hrs. "	1.4 lbs.	6x2.3x1.3



Bluestem Productions, Box 334, Wayzata, MN 55391, 612-927-2870 (24 hrs.)
Please send me:

___ 8 Amp. Hr. (\$34.95) ___ 5.5 Amp. Hr. (\$32.95) ___ 2.6 Amp. Hr. (\$29.95)
___ Universal Charger (\$11.95)

TERMS: Check, Money Order, Visa/MC, U.S. Funds only
Add \$4 to total for freight.

Name _____

Phone _____ Address _____

City _____ St _____ Zip _____

___ VISA ___ MC # _____ Exp. Date _____

Signature _____

Left to Right: Prairie Power 5.5, 2.6, 8.
Front to Back: Tandy Model 100, Olivetti M10, NEC 8201A.

what you want. With high-level computer languages the terms and syntax are ours. With machine language you must tell the computer what to do using the terms and syntax of the language of its processor. If you want machine language to work for you, you have to work with it.

Model 100 machine language programmers are lucky. The 100's processor is an 85C85 with an instruction set that is a subset of both the 8080 and the Z80. Software for reference to learn from is everywhere. Most all of the old software concepts and techniques are new again. You can learn from those that worked ... and those that didn't. For more on the 8085 instruction, read Mnemonic Powers, page 170, 80 Micro, January, 1984.

And the 100's ROM is a 32K library of subroutines just waiting for use. Here's a list of some sources of Model 100 ROM information: Model 100 ROM Functions, Radio Shack (RS) 700-2245; TRS-80 Microcomputer News, November, 1983; Inside the 100, 80 Micro, December, 1983; Tandy Talk, Portable 100, January, 1984; and the Model 100 Technical Reference Manual, RS 26-3810.

With machine language program-

listing two. demo.do program

```

:++MICROASSEMBLER DEMO++
      ORG  #62000
:MODEL 100 SUBROUTINES
CLS    EQUAL #16945
POSIT  EQUAL #17020
DISPLY EQUAL #10161

```

```

: H=COL(1-40) & L=ROW(1-8)
BEEP   EQUAL #16937
CHGET  EQUAL #4811
:

```

```

START  CALL CLS
        LD   HL,MSG1
        CALL PRINT@
        LD   HL,MSG2
        CALL PRINT@
        LD   HL,MSG3
        CALL PRINT@

```

```

:SET CURSOR TO COL=11 ROW=7
KEYIN  LD   HL,#2823
        CALL POSIT
        CALL CHGET
        CP   $1

```

```

CALL Z,BEEP
CP     $2
RET    Z
JP     KEYIN

```

```

PRINT@ LD E,(HL)
        INC HL
        LD D,(HL)
        PUSH HL
        EX  DE,HL
        CALL POSIT
        POP HL
        INC HL
        CALL DISPLY
        RET

```

```

:---MESSAGES & CURSOR POS.
: = COL(1-40)*256ROW(1-8)
: COL=5 ROW=1

```

```

MSG1  WORD  #2561
      STRING $+MICRO
      STRING $ASSEMBLER
      STRING $ DEMO+

```

the Black Jack™

A NEW PORTABLE
MODULAR JACK FOR MODEMS



Have you ever been dealt out of telecommunications in hotels, offices and other places on the road? Why gamble on finding a telephone jack that will accept your modem. Deal yourself a winning hand with the **Black Jack**.

Simply unscrew the mouthpiece together with the microphone and carefully set them to one side. Attach the **Black Jack** on the handset, insert your RJ11C direct connect line cord from your modem and you're ready for action. You may now dial direct from your computer if your modem has Touch Tone® dialing.

If not, simply dial from the telephone itself. When your telecommunications are complete, snap off the **Black Jack** and replace the mouthpiece.

Price: \$49.95.

For enduser orders contact: 1-800-227-3800 Ext. 245.

For dealer inquiries and

OEM information contact: **the microp peripheral corporation**

2565 - 152nd Avenue NE, Redmond, WA 98052
(206) 881-7544

*the Black Jack is a trademark of The Microp peripheral Corporation.

32 ON READER SERVICE CARD

PORTABILITY



\$59.95

(Add \$2.50
shipping & handling
per case in the
continental U.S.,
Alaska & Hawaii
add \$3.50)

MADE COMPLETE

The **Chip-Tote™ PCD-1** makes your TRS-80 Model 100, 200 or comparably sized briefcase portable truly complete. It's the first lightweight soft case that doubles as a desk.

The **Chip-Tote™ PCD-1** is constructed of rugged Cordura® nylon and our special closed cell foam, so you can be sure your computer and its accessories will get the maximum in protection. So next time don't leave the office behind — carry it with you!

YES, send me: ____ PCD-1(s) in ____ Black ____ Smoke Grey

Name ____ Phone (____) ____

Address ____

City ____ State ____ Zip ____

Signature ____

☐ CHECK/MO (CA res. add 6% tax) ☐ C.O.D. (Add \$1.65)

☐ M/C ☐ VISA Exp. ____



KANGAROO VIDEO PRODUCTS, INC.

10845 Wheatlands Ave., Suite "C" • Santee, CA 92071-2856 • (619) 562-9696

ENGINEERED CASES FOR SENSITIVE ELECTRONIC EQUIPMENT

27 ON READER SERVICE CARD


```

      BYTE    #0
: COL=4 ROW=3
MSG2  WORD    #1027

      STRING $ENTER
      STRING $<1> BEEP
      BYTE    #0
: COL=10 ROW=5
MSG3  WORD    #2565
      STRING $<2> GO BACK
      STRING $ TO BASIC

      BYTE    #0
      EXEC    START

```

listing three. document object code

```

62000          ORGNN          #62000
62000 CLS          EQUALNN    #16945
62000 POSIT       EQUALNN    #17020
62000 DISPLY      EQUALNN    #10161
62000 BEEP        EQUALNN    #16937
62000 CHGET       EQUALNN    #4811
62000 205 49 66 START CALLNN
62003 33 103 242 LDHLNN

```

ing, bytes of data are manipulated with the processor's instructions: input, output, load, add or subtract, jump, call, and logical operations. You must, in effect, think like the processor. Cobug's instruction table uses the mnemonic notation of the dominant Z-80.

The instructions are read from right to left. For example, LD A,B means load register B into register A. Movement, when an instruction requires it, is always right to left. Machine language is all about moving and operating on bytes of data.

Along with the 80C85 processor instructions, there are assembler instructions in the source program to tell the assembler what to do where and when, and which is what. Cobug's instruction table lists the standard 8085 instructions in Z80 mnemonics, three undocumented 8085 instructions, and six assembler instructions (pseudo ops — 255 in all).

There are ten known undocumented 8085 instructions (The Secret Life of the 8085, 80 Micro, September, 1980). But Cobug's instruction table includes only four of the more useful ones: LD HL, (DE) for "load memory pointed by DE into HL," RHLR for "rotate HL right,

NEW! IMPROVED OPERATING SYSTEM

A&J MICRO DRIVE



HOLMES PORTABLE MICRO DRIVE
ENGINEERING, INC.



High Speed Data Transfer
Battery Powered with Charger
No Modification to Model 100
Saves Text Files and Programs
Uses Built-in Telecom Mode

MICRO WAFER

5 ft	\$3.50
10 ft	\$3.50
20 ft	\$4.00
35 ft	\$4.00
50 ft	\$4.50

MODEL 100 PMD-100 \$369.50

Add \$6.50 Shipping, Includes: PMD-100 Drive,
3 Wafers, AC Adaptor/Battery Charger,
Power Cable, Manual, PMD User Group Membership

MODEL 100 IM-100

8K RAM Modules \$79.50

PMD-100 Owners Manual \$4.95

WAFERS

Wafers are the same as used in Model 1 ESF.
Also compatible with OLIVETTI MTU-231,
Royal and ADLER Tape Drives, and Structure
Design SD-2024 PAL Programmer, Stringy
Floppy for TIMEX 1000 and 1500.

A&J Micro Drive

1050 E. Duane Ave., Suite I
Sunnyvale, CA 94086
(408) 732-9292

Send \$4.95 for Owners Manual and more information

- ☐ Check or Money Order Enclosed ☐ C.O.D. add \$1.65
☐ U.P.S. Shipping cost, add \$3.00, unless otherwise specified
☐ VISA ☐ MASTERCARD ☐ CA residents add 6.5% sales tax

Card # _____ Exp. date _____

Name _____

Address _____

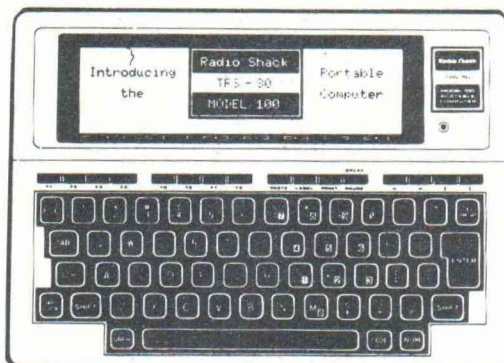
City _____ State _____ Zip _____

Authorized Distributor for
Exatron and Holmes

TRS-80™

SAVE SALES TAX* PLUS DISCOUNT

*TEXAS RESIDENTS ADD ONLY 4%



MODEL 100 32K

FORT WORTH COMPUTERS

WE ARE SERIOUS ABOUT SAVING YOU MONEY

(Located 30 miles from Fort Worth)

377 Plaza • GRANBURY • NR FORT WORTH, TEXAS 76048

TOLL FREE: 1-800-433-S-A-V-E

Monday thru Friday — 9:00 a.m. to 5:00 p.m.

(Order inquiries/Customer Service &) IN TEXAS: 817-573-4111

through carry;" RDEL for "rotate DE left, through carry;" and SUB HL,BC for "subtract BC from HL."

FIRST INSTRUCTION. The assembler instructions (pseudo ops) recognized by Cobug are: ORG #nnnn — the first instruction in the source program — sets the memory location of the start of object program in memory. The decimal address in memory is #nnnnn. The value must be less than 63,960 for non-disk, less than 58,963 for disk, and the reserved RAM area of the machine. For machine language programs, RAM is reserved by entering in BASIC, CLEAR 100, MAXRAM-nnnn (nnnn is the number of bytes to reserve).

EXEC #nnnn or EXEC xxxxxx must be the last instruction of the source. It sets the execution address. Specify either a label or a decimal address. BYTE #nn lets you set the value of a memory location to a one-byte decimal value between zero and 255. It can be used to name a storage location or to set the value of a label to a constant.

WORD #nnnn lets you set the value of two consecutive bytes of memory to a decimal value between zero and 63,676. Use it for two-byte constants. STRING \$xxxxxxx lets you set the byte

62006	205	89	242	CALLNN
62009	33	129	242	LDHLNN
62012	205	89	242	CALLNN
62015	33	146	242	LDHLNN
62018	205	89	242	CALLNN
62021	33	7	11	KEYIN LDHLNN
62024	205	124	66	CALLNN
62027	205	203	18	CALLNN
62030	254	49		CPNN
62032	204	41	66	CALLZNN
62035	254	50		CPNN
62037	200			RETZ
62038	195	69	242	JPNN
62041	94			PRINT@ LDE(HL)
62042	35			INCHL
62043	86			LDD(HL)
62044	229			PUSHHL
62045	235			EXDEHL
62046	205	124	66	CALLNN
62049	225			POPHL
62050	35			INCHL
62051	205	177	39	CALLNN
62054	201			RET

STRONG VERSATILE HARD COVER FOR MODEL 100

DESK TOP PROTECTION from dust, spills and things that get dropped. Optically clear so time and modem prompted messages are seen at a glance.

THE ULTIMATE LAP MACHINE! Invert cover and add KJM Prop Legs to create a stable interlocked unit at a most comfortable lap use angle.

THE PERFECT SOLUTION to proper protection of screen, keys, and key switch shafts when carrying in a briefcase, its softcase or in any case. Made of .080 inch thick high impact Eastman PETG plastic.

To be notified when available for other topless portables, send your name, address & model number.

\$1795 + \$200 S & H, Check or MO, Texas Res. add 5%.
30 Day Money Back Satisfaction Guarantee!

[Prop Legs
not included]

THE SOUTHWORTH COMPANY, Dept. F
4001 Hawthorne Ave., Dallas, TX 75219

49 ON READER SERVICE CARD

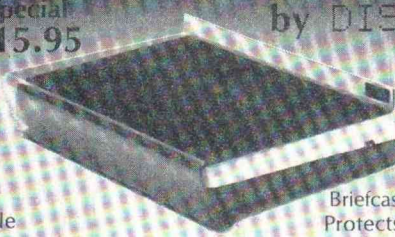
PORTABLE COMPUTER DESK TOP STAND

DUAL PURPOSE

THE POCO STAND

Special
\$15.95

by DISKUS™



Improves Viewing and Typing Angle

Briefcase Portable
Protects Keyboard
while carrying

Mail Check or Money Order to: DISKUS PRODUCTS 6003 Bandini Blvd., Los Angeles, CA 90040. VISA or M/C call (213) 726-3088 The POCO STAND \$15.95 plus \$2.00 each unit Shipping & Handling — CA residents add 6.5% sales tax. Patent Pending. ©1983 DISKUS PRODUCTS For RUSH Delivery add \$2.00 extra — U.P.S. Blue Label

22 ON READER SERVICE CARD


```

62055      1  10      MSG1      WORDNN
62057      43      43      77 M      73 I
           67 C      82 R      79 O
62064      65 A      83 S      83 S      69 E
           77 M      66 B      76 L      69 E
           82 R
62073      32      68 D      69 E      77 M
           79 O      43      43

62080      0
62081      3      4      MSG2      WORDNN
62083      69 E      78 N      84 T      69 E
           82 R      32
62089      60 <      49 I      62 >      32
           66 B      69 E      69 E      80 P

62097      0
62098      5      10      MSG3      WORDNN
62100      60 <      50 2      62 >      32
           71 G      79 O      32      66 B
           65 A      67 C      75 K
62111      32      84 T      79 O      32
           66 B      65 A      83 S      73 I
           67 C
62120      0

```

values of consecutive memory locations to the ASCII values of the text string. Use it to set up screen prompts, tables, or buffer areas in memory. EQU #nnnn lets you make a label equal to a value between 0 and 63,676 decimal. Use it to name the address for ROM subroutines, other machine language programs, or constants in your program.

A numeric constant is #nn. The decimal value is nn. A maximum value of 255 for a one-byte constant, and 65,535 for two-byte constants. \$x is an ASCII constant with x being any of the ASCII characters. And a colon (:), as the first character of a source line, defines the line as a comment. Cobug skips it.

SOURCE PROGRAM. Cobug parses each line according to the position of the text in each line. Counting from left to right, the label field is from positions one to six. Any ASCII character other than a space in position one is a label.

The opcode/operand field extends from positions 8 to 30. The opcode spelling must exactly match that of table one, or a syntax error results. If the opcode requires an operand, it follows and can be a numeric constant

continued on page 62

Introducing ROM2 for the NEC 8201A

MACRO Assembler

Macro definition and invocation with symbolic arguments
Conditional assembly code blocks
Expression evaluation: parens, +, -, /, * and binary shift operators, also binary, decimal, hexadecimal, octal and ASCII constants and labels
Label table retained for symbolic debugging
Optional ASCII output for transfer to other machines

Plus

Renummer BASIC (for Model 100 only)
Extended BASIC/Machine prog CALL command
RAM files directory with sizes
Copy and Compare RAM .DO files
RAM .DO file global text substitution

SYMBOLIC Debugger

Full assembler expression evaluation (including labels)
Interactively patch machine code
Interactively execute 8085 instructions
Trace program simulation
Single step plus six other simulation modes with repeat count
Set program counter breakpoints
Hex/ASCII memory dump
Disassemble memory

Hardware

Installs in option ROM socket on Model 100 or NEC 8201A
Low power CMOS ROM
Compatible with Model 100 DVI and other expansion bus products

ROM2

POLAR ENGINEERING AND CONSULTING

Box 7188, Nikishka, Alaska 99635

(907) 776-5529

\$95.00

Plus \$3.00 Shipping and Handling

Please specify ROM2 for the Model 100 or NEC 8201A

THE BEST SHOT YET FOR MARITAL BLISS

Telecommuter 7.5

Sigea Systems Inc.
19 Pelham Rd.
Weston, MA 02193
617-647-1098
\$200

By JOHN P. MELLO JR.

Marrying a Model 100 to a desktop computer is a common inclination of many owners of Tandy's dutiful lap portable. But such nuptials, rather than made in heaven, often seem concocted in hell. Recognizing this, Sigea Systems developed Telecommuter. The result: conjugal bliss between the 100 and 16-bit micros.

Telecommuter runs on the Tandy Models 2000, 1200, and 1000, and IBM and compatibles. It takes the critically acclaimed software in the 100, and builds on it to create a symbiotic delight.

The conceit behind Telecommuter doesn't originate with Sigea. It has been part of the informal theory of lap portables since they were conceived that they should be a subordinate extension of a micro.

PAID THE PRICE. Early portable makers ignored this approach and paid the price for it. The Epson HX-20 had no relationship to a micro and sold few units. The Kyocera machines (so named because they were manufactured by the Japanese firm working with software giant Microsoft) faced a similar problem. Sales of the NEC 8201A were dismal; the Olivetti M-10 never got out of the gate in the states; and while analysts like to pay homage to the success of the Model 100, the fact remains the computer hasn't sold the way Tandy expected it to sell.

The lessons of the past haven't been wasted on portable makers. A quick look at the current batch of lap computers shows the makers embracing the subordinate extension conceit by incorporating desktop operating systems into their portables.

The logic behind this approach is this: portables are bought as second computers; a user wants the operating

system of his second computer to echo the system in his desktop.

However, the approach is an expedient solution to the problem. It's an approach assuming desktop operating systems are so good, they should be emulated. And it discourages a manufacturer from making a portable with innovative software in it.

INVISI-DOS. What Sigea Systems does with Telecommuter is recognize the importance of the "invisible operating system" incorporated into the Model 100 and creates an enhanced version to run on 16-bit machines. Instead of downsizing an arcane operating system to run on a portable, Sigea has upsized a friendly system to run on a micro.

Telecommuter's operating environment is the same as the 100's. The function keys have the same functions in Telecommuter (although new functions are added) as they do in the 100. Files are opened and closed the same way: move the cursor over to a file and press enter to enter the file; press function key eight (F8) to close the file and return to the main menu.

In text, cursor movements echo the 100's: left-right by single character and word; left-right to beginning or end of current line; up-down by line, screen, or to top or bottom of the file. An added move is up-down by paragraph.

It has been part of the informal theory of lap portables since they were conceived that they should be a subordinate extension of a micro.

While you enter text in insert mode, in the Model 2000 version this feature can be toggled. As with the 100, characters can be deleted to the left and under the cursor, but you may also delete by word and to the end of a line.

BLOCK MOVES. Block moves are conducted by selecting text. However, once selected, text may also be saved as a separate file, appended to an existing file, or printed. Unlike the 100, though, text placed in the select buffer is lost once you exit from the current file.

All the search-and-replace features thirsted for by 100 owners are in Telecommuter: search for string, search for next occurrence of the string, replace string, global search-and-replace of string. And telecommuter will search for any ASCII character, including enter. (A spokesman at Sigea told me the program's latest version allows you to replace a search string with the contents of the paste buffer.)

Telecommuter uses dot commands to format documents, and supports multiple-line headers and footers; centering; left, right, top, and bottom margins; hanging indents; and file chaining. And a file may be previewed before it's printed. While in a text file, Telecommuter also offers some powerful file-handling commands including load another file at the current cursor position, extract text from another file and load it at the current cursor position, append current file to another file, and display a directory without leaving the current file.

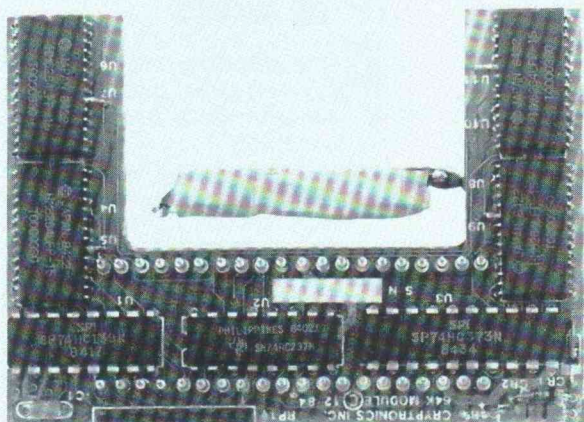
TELCOM. Telecommuter's communications program also reflects the 100's. You may find a phone number at the press of a one function key and dial it at the press of another. (Records in Telecommuter's ADRS.DO file have the same syntax as the 100's, so auto-log-on entries don't need to be rewritten.) Redialing a number is as easy as hitting enter.

In terminal mode, you may break away from the system you're connected to, edit a file, and return to the system. (The latest version of Telecommuter displays the time, so you can track your time on line.)

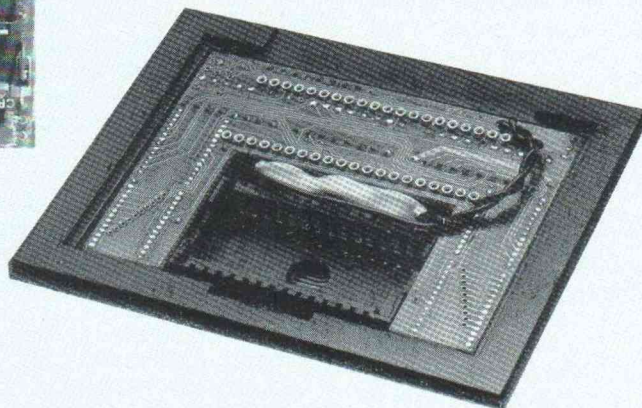
A host mode lets you call up your micro from a remote location and upload and download files. When you return to your micro, you can use Telecommuter's fast file transfer utility to send or receive files at 9600 baud. (A null-

64K Internal expansion RAM for Model 100

Expand your Model 100 up to 96K internal RAM



Priced at
64K expansion \$425
32K expansion \$275
32K upgrade \$200



This expansion board uses low power CMOS static RAM to add 64K (or 32K) of internal memory to your Model 100. The board snaps into the compartment on the bottom of the Model 100 and is covered by the original cover. Since the ROM socket, located in the same compartment, is a valuable feature of your Model 100, the 64K board leaves it accessible. A disk/video interface can be connected without removing the board.

- Also available in 32K that is upgrade-able to 64K
- Installation instructions and test program included
- One year warranty includes battery
- NiCad battery recharges automatically
- Optional program allows transfer of data between banks

Your satisfaction is our goal. If within 30 days of purchase you decide not to keep the unit, return it, in new condition, for a full refund.

To order, call or write us at the address below. Shipping UPS ground, add \$2.50. UPS air, add \$5.00. Foreign shipments, please ask for quotes. M/C, VISA, check or money order payments accepted. Checks require two weeks clearance.

Dealer and volume pricing available

Send for descriptive literature.

AI **Cryptronics, Inc.**
11711 Coley River Circle, Suite 7
Fountain Valley, CA 92708
Phone: (714) 540-1174

CHIPMUNK AVAILABLE THROUGH PCSG

Holmes Engineering's Chipmunk now is available through Portable Computer Support Group (PCSG).

In a collaborative agreement that could happen only in this fast-paced industry, the two opposing teams have come together to bring 100 owners one disk drive. Apparently, PCSG has abandoned the development of its disk drive and will instead be marketing the Chipmunk, and designing software for it — two areas the group is better suited for than hardware design.

"The Chipmunk still will be manufactured by Holmes, which now is a subsidiary of American Technology Corporation (AMTEK) of Salt Lake City, UT," explained Mike Miller of AMTEK. Although AMTEK will finish up its pre-existing orders, he continued, new orders will be shipped out by PCSG.

To insure any rights to the foreign market, Miller told Portable 100/200: "AMTEK will hold onto rights for foreign sales. There's a reasonable market in Europe for the 100 and especially the Olivetti, so we can speculate sales (from there) will be coming in."

For background on the Holmes sale to AMTEK, former Holmes Engineering employee Bob Willard reported: "Holmes Engineering was purchased by AMTEK in September 1984 to allow AMTEK to expand from consumer electronics markets into the field of OEM (original equipment manufacturer) computer products. Holmes will contribute to the strength of AMTEK's engineering and manufacturing capabilities while achieving a significantly stronger financial position through a broader product and marketing base."

MACHINE LANGUAGE PROGRAMS EDIT & DEBUG

Tex Pro is almost like having a ROM chip," David Sumner, author of Micro Demon Inc.'s newest software said.

Designed to enhance the 100's text editing capabilities, Sumner said Tex Pro's concept is new: "Although in machine language, it loads as if a BASIC program, interfacing itself with the operating system after the first run. . . . It allows you to scroll the display and redefine some of the (100's) keys."

Although Sumner was putting the final version of the documentation together when we talked, the software should be available from the Columbia, SC, company by the time this issue is published.

Here's another machine-language program for the 100 . . . CBUG from Custom Software, Wellington, KS. Cited as being the "ultimate debugging utility for the 100," it requires less than 3K of RAM to operate and, promises the manufacturer, makes debugging assembly language programs a lot easier.

SIDECAR JOYRIDE FOR NEC 8401

Owners of the new NEC 8401 will be interested to hear that SideCar inventor, Larry Berg of Purple Computing, is being wooed by NEC.

According to Berg, officials from the Elk Grove, IL, company asked him if he'd like to work with their latest machine, adapting his original SideCar unit which was for the NEC 8201 to the NEC 8401: "I've signed a disclosure agreement and am now working up a 428K RAM disc for adaption. (They've) given me support equipment, schematics, and documentation . . ."

The new SideCar should be less expensive than the original, but also more sophisticated, Berg added.

Watch for SideCar 84 this Spring.

UP IN ARMS

For quick power and light portability, you can't beat A.R.M.S.' 5-ounce rechargeable battery for the Model 100.

"Attached to the 100 with velcro, the lightweight gives you portable power for nine hours. It fits right in the case the 100 comes in from Radio Shack," electrical designer Bob Ripley explained. The Power 100 Battery sells for \$29.95 and payback, according to Ripley, is usually less than 6 months.

A.R.M.S. is located in Richmond, VA.

DATA-BASE MANAGEMENT

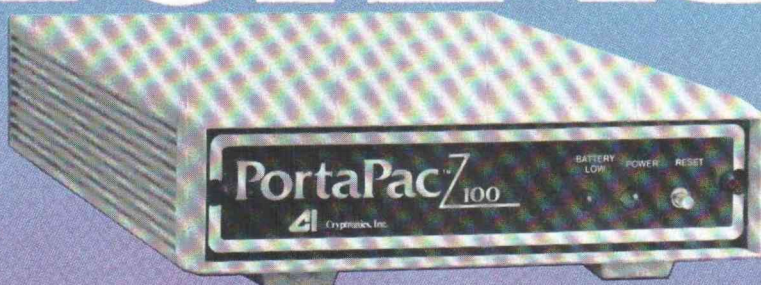
Model 100 users no longer have to fool around with trying to devise their own data-base management systems, thanks to CBG Software, Livonia, MI. Their two-program system, said a CBG spokesman, is divided into two modules.

"The first module allows a 100 owner to define the elements of a data base and a screen through which data can be added, deleted, or changed. Under 5K, the module can be eliminated from the 100 once the data base is defined."

Module two, under 9K, is called the Database Manager and is used to screen the data in module one.

If you find you frequently need data bases, but lack the time to create the programs, the CBG Database Management System will provide you with professional screens and reports with minimal effort. □

MASS STORAGE



PortaPac™ 100

The PortaPac 100 is a solid state mass storage RAM disk for portable computers. Featuring its own operating system PortaPac 100 communicates through the RS232C. It is portable thanks to memory backed by an internal rechargeable battery. The unit will recharge or operate from an AC adapter (included), automobile cigarette lighter*, or extra external battery*.

The PortaPac 100 can transfer files or programs to micro computers including those using MSDOS or CP/M. Up to 32 files can be stored per 60K of RAM. The lesser memory models can be expanded to 240K.

\$325.00	\$395.00	\$465.00	\$535.00
60K RAM	120K RAM	180K RAM	240K RAM

4I **Cryptronics, Inc.**
11711 Coley River Circle, Suite 7
Fountain Valley, CA 92708
Phone: (714) 540-1174

*optional

Please Send For Descriptive Literature

Registered Trademarks: CP/M - Digital Research

OUR BIGGEST ACHIEVEMENT IS ALSO OUR SMALLEST.



Only Text Power 100™ has Page Plot.™ At a glance you can see the full format of every page before printing.

Include the make of your printer with your order.
Text Power 100™ works with parallel printers only.
Include \$10.00 for each additional printer.
Make checks payable to The Covington Group.

Send your order to:
The Covington Group
310 Riverside Drive, Suite 916
New York City, N.Y. 10025
Questions? Phone 212 678-0064/864-1700

Name _____

Street _____

City _____ State _____ Zip _____

Phone _____ Master/Visa Card No. _____ Exp. Date _____

Computer _____ Signature _____

Who says size doesn't count?

From the software ads around here, you might get the impression that your portable computer can store the knowledge of the universe. But it can't. That's why you need to know just how big the software is. Or how small.

Keep this in memory: Text Power 100™ is 2,500 bytes long. Elf-writer (by Ceres Software) is 10,000 bytes long. Write + (by Portable Computer Support Group) is 3.5K. The Traveling Writer™ (by Traveling Software) is 5000 bytes. When our competitors' ads don't tell you how big their programs are, they're trying to tell you something.

Size is just one advantage of our 100 percent machine-language code. The other is speed. Text Power 100™ formats faster than you can imagine. Faster than all of the competition's products working in parallel. Fast enough to format the Bible in 12 minutes. Right-justified.

Text Power 100™ features: Page Plot,™ merge text, edit mode, label printing, page numbering, formatted preview mode, parameter/file memory, right justification, footers, headers, internal format controls, page length, top margin, bottom margin, left margin, right margin, double/single spacing, vertical center, horizontal center, page break display, new page command, full printer customization and more.

Text Power 100.™ For the Model 100, Olivetti M10 and NEC PC-8201A. \$49.95 plus \$2.00 shipping. Available exclusively from The Covington Group/310 Riverside Drive, Suite 916, New York City, NY 10025/ 212 678-0064, 864-1700.

TEXT POWER 100

13 ON READER SERVICE CARD

PG# RS# ADVERTISER

53	1	A & J
1	2	Acroatix
43	3	Alpine Data Systems
61	4	Alpine Data Systems
68	5	Axonix
51	6	Bluestem
32	7	Buddy Systems
12	8	Cabbage Cases
46	9	Canada
46	10	CISS
24	11	Chattanooga Choo Choo
67	12	Chatanooga Systems
60	13	Covington
59	14	Cryptronics
57	15	Cryptronics
25	16	Cryptronics
40	17	CompuServe
8	18	Custom Software
48	20	Delker Electronics
63	21	DFW Computer Center
54	22	Diskus Products
49	23	Economy Computers
46	24	Elexor
53	25	Fort Worth Computers
65	26	GSP
29	58	IRD
52	27	Kangaroo
5	28	Key Solutions
9	29	Loquor
67	30	Menlo Systems
10	31	Micro Demon
52	32	Micro Peripheral Corp.
67	33	Pacific Marine Corp
CII	34	PG Design
29	35	PG Design
63	36	PIC
55	37	Polar
69	38	Polar
49	39	PORTAPRO
3	40	P.C.S.G.
19	41	P.C.S.G.
20	41	P.C.S.G.
21	41	P.C.S.G.
22	41	P.C.S.G.
31	42	P.C.S.G.
CIII	43	Purple Computing
13	44	Purple Computing
15	45	Radio Shack
37	46	Radio Shack
16	47	SIGEA
26	48	Source, The
54	49	Southworth
65	50	Survey Software
62	51	Swindell Judy
64	52	3M Company
48	53	Tobias
62	54	Touchbase
34	55	Traveling Software
CIV	56	Traveling Software
7	57	Waite Group

"AMAZING!"

That's what people all over the world have been saying about our games. Why? . . . Because, from FAST PACED ACTION to THOUGHT PROVOKING STRATEGY, we have the perfect solution to **"THUMB TWIDDLING."**

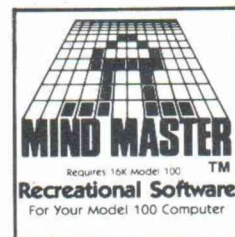


Sky Raider

The red alert has sounded and the deadly Borons are closing in! Faster and faster, they seek your ship out — prepare or be eliminated! ASG-110 **\$19.95**

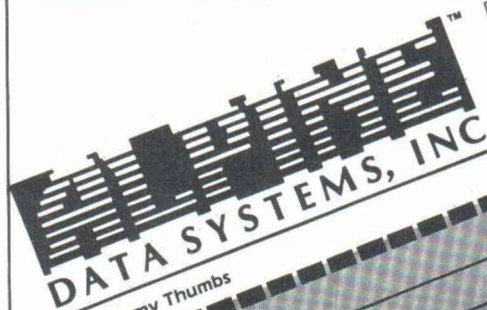
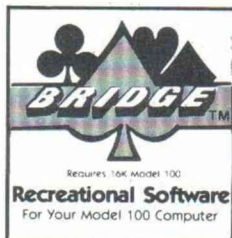
Mind Master

The Mind Master presents the ultimate test of your memory — but time is running out! Meet with the Master and prepare to have your wits challenged to the limit! ASG-115 **\$19.95**



Bridge

For the well-seasoned bridge player as well as the beginner — now you can play contract bridge ANYTIME! The program handles bidding, actual play of hand and scoring. ASG-210 **\$19.95**



Dept. PI, P.O. Box 1157
Elizabeth City, NC 27909
Phone: (919) 338-3202
EMAIL: 75735, 1440

OK! Twiddle my Thumbs

Name _____
Address _____
City _____

☐ Check - M.O.

☐ MC

☐ VISA

Signature _____

Card No. _____

☐ ASG-110

☐ ASG-115

☐ ASG-210

City _____

State _____

Zip _____

Exp. Date _____

Total _____

U.S. add \$3.00 shipping and handling.
Outside U.S. add \$10.00.
NC residents add 4.5% sales tax.

Dealers Inquiries Welcome.

(#nn), an ASCII constant (\$x), or a label. A source line with a colon as its first character is considered a comment line and is skipped by the assembler.

The source file of a machine language program consists of combinations of labels, opcodes, and operands arranged sequentially. The general form of my programs is that of the DEMO. Listing two gives you the idea.

There are four sections. The first defines ROM subroutines, constants, and variables. Second is the mainline of the program. Third are the subroutines to make it go. Fourth are the program messages.

The 100's text editor and file operating system make the construction of source programs easy, just like writing. If you make a library file of the source routines that work for you, you need only to use edit and paste to put them into a new program.

This assembler is in BASIC, by nature a relatively slow but universal utility language. Time of course is the trade off when using BASIC for a high-level task such as this. So the assembler is slow by most measures, taking about one minute to assemble a 30-byte object program. That means over a half

instruction table

ADC	A, (HL)	CP	A	JP	M, NN
ADC	A, A	CP	B	JP	NC, NN
ADC	A, B	CP	C	JP	NN
ADC	A, C	CP	D	JP	NZ, NN
ADC	A, D	CP	E	JP	P, NN
ADC	A, E	CP	H	JP	PE, NN
ADC	A, H	CP	L	JP	PO, NN
ADC	A, L	CPL	A	JP	Z, NN
ADC	A, #10	CP	#11	LD	(BC), A
ADD	A, (HL)	DAA		LD	(DE), A
ADD	A, A	DEC	(HL)	LD	(DE), H
ADD	A, B	DEC	A	LD	(HL), A
ADD	A, C	DEC	B	LD	(HL), B
ADD	A, D	DEC	BC	LD	(HL), C
ADD	A, E	DEC	C	LD	(HL), D
ADD	A, H	DEC	D	LD	(HL), E
ADD	A, L	DEC	DE	LD	(HL), H
ADD	A, #20	DEC	E	LD	(HL), L
ADD	HL, BC	DEC	H	LD	(HL), N
ADD	HL, DE	DEC	HL	LD	(NN), A
ADD	HL, HL	DEC	L	LD	(NN), H
ADD	HL, SP	DEC	SP	LD	A, (BC)
AND	(HL)	DI		LD	A, (DE)
AND	A	EI		LD	A, (HL)



THE WINNING COMBINATION

SJi Word 100 and Model 100 TEXT

SJi Word 100 & TEXT combine to give you a feature-packed word processor. Others offer these features, but you'll pay 2½ to 5 times this price.

\$19.95

FEATURES:

- Fast, compact machine language program.
- Page format display shows formatting before printing.
- Dot-style commands embedded in text.
- Margin controls (top, bottom, left, right).
- Justification (left, right, center).
- User-adjustable tabs. ● Multiple copies.
- Directed output to RAM, cassette, serial or parallel ports.
- Merge with mailing address file.
- File chaining. ● Headers. More, More, More.

Comes with complete source code listing.

SWINDELL JUDY inc. (216) 833-7504
SUITE 349 - 4316 DRESSLER RD. N.W. CANTON, OH 44718

IT'S HERE!

**Finally, an internal modem
for your NEC-8201A**

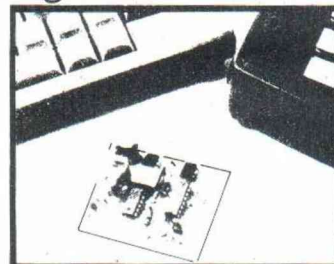
NEW Now, the TouchBase Modem
comes with Auto Dial and
Auto Log On software!!

TouchBase Design is proud to announce production of the TouchBase Modem—the **only internal, direct connect modem** designed for installation inside the NEC-8201A portable computer.

When using the TouchBase Modem, the phone line loops **directly** into the computer via an RJ 11 jack; dial the number, and you are on line! No extra batteries—the TouchBase Modem is powered by the computer, and virtually turns off (25 micro amps) when not in use. This unique design also allows the RS 232 port to be used with **any other** peripheral when the TouchBase Modem is not in use.

Installation is easy: by using the supplied instructions and a small screwdriver, the TouchBase Modem can be installed in about 10 minutes. Because of the friendly design, there is absolutely **no** soldering necessary.

The TouchBase Modem is **the way to hit the road.**



NOW: \$129

- Includes cable and software.
- 30 Day Unconditional Guarantee
- Proven Operation

For dealer pricing information, please contact:

TouchBase Design
1447 South Crest Drive
Los Angeles, CA 90035
(213) 277-1208

AND	B	* EQUAL	#0	LD	A, (NN)
AND	C	EX	DE, HL	LD	A, A
AND	D	* EXEC	#58000	LD	A, B
AND	E	HALT		LD	A, C
AND	H	IN	A, #230	LD	A, D
AND	L	INC	(HL)	LD	A, E
AND	#15	INC	A	LD	A, H
* BYTE	#0	INC	B	LD	A, L
CALL	C, NN	INC	BC	LD	A, #200
CALL	M, NN	INC	C	LD	B, (HL)
CALL	NC, NN	INC	D	LD	B, A
CALL	NN	INC	DE	LD	B, B
CALL	NZ, NN	INC	E	LD	B, C
CALL	P, NN	INC	H	LD	B, D
CALL	PE, NN	INC	HL	LD	B, E
CALL	PO, NN	INC	L	LD	B, H
CALL	Z, NN	INC	SP	LD	B, L
CCF		JP	(HL)	LD	B, #22
CP	(HL)	JP	C, NN	LD	BC, NN

NN= Symbol or label

**= Undocumented Instructions

*= Pseudo ops, Assembler Instructions

hour to assemble a 1K program.

A WALK THROUGH. Listing one has few comments. That's intentional so you won't have to skip over them when keying all 7,631 bytes of it. Follow the listing, and we'll walk through a description of how the program works.

The program consists of four sections. Initialization runs from lines zero to 90. The mainline of program uses lines 100 to 1,040. The subroutines are contained in lines 5,000 to 9,500. And the opcode table resides in lines 10,000 to 10,640. In the initialization, line 15 creates dimensions for the label/symbol table. The value of 150 was for a 1.3K program.

To minimize runtime memory requirements, adjust it to suit your program. Lines 40 to 55 make a table of the addresses of the opcode data statements. A binary search subroutine uses the table to find the opcode, the number of bytes in it, and its decimal value.

The program loops thru the mainline for each pass, with the variable PS doing the switching. The first pass just lists the assembly to the screen, tests the opcodes, and makes the label/symbol table, which sorts at the end of the first pass if there are no errors. The second pass lists to the screen, tests opcodes

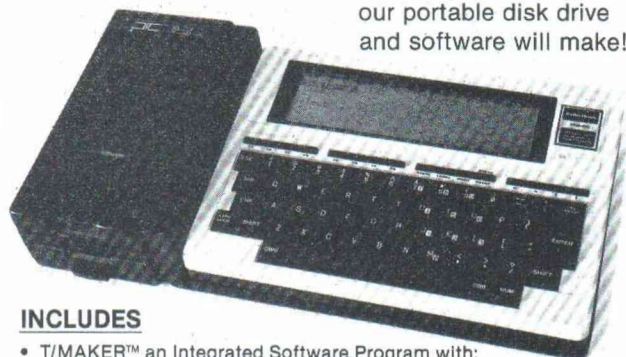
PIC

PIC

PIC

3.5 Inch MicroDrive with Integrated Software \$799 Complete*

See what a difference our portable disk drive and software will make!



INCLUDES

- T/MAKER™ an Integrated Software Program with:
 - Wordprocessor
 - Spreadsheet
 - Spelling Checker
 - Relational Data Base Manager
 - 50,000 Word Dictionary
- Communications Software (MODEM)
- Popular CP/M™ 2.2 Disk Operating System
- Additional 32K Bytes Ram for 64K Bytes Ram Total
- Battery Powered 3.5 in Drive, 360K Bytes per Diskette
- Battery Charger, Cables & Mounting Hardware Included

Attaches to your MODEL 100, NEC8201 or OM-10

CALL OR WRITE

PIC, 18013 Skypark Circle, Suite D, Irvine, CA. 92714
714-261-0503

*Does not include Computer; M.C., Visa or check, plus \$5 shipping and 6% sales tax California residents only.

TRS-80

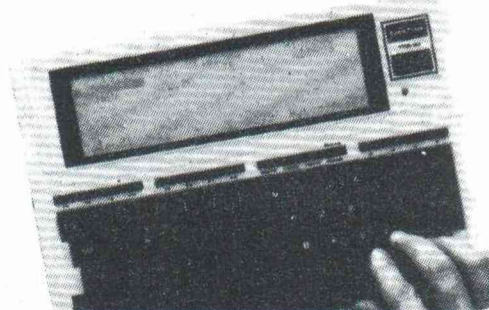
ALWAYS AT SALE PRICES



WE SHIP FAST!

DFW COMPUTER CENTER
326 MAIN ST., GRAPEVINE
TEXAS 76051 — (817) 481-7283

OUR TRS-80s Have the Radio Shack warranty



To get YOUR SALE price CALL:

1-800-433-SALE

and labels, and pokes the object program into RAM.

In the mainline, for each pass the program loops on reading lines of the source file until the end-of-file (EOF) terminates it. Each source line gets tested: first for a comment line, a colon as the first character; next for a label, first character not a space; and then the right-hand portion, from the seventh position, for an instruction, assembler, or 80C85 opcode.

BINARY SEARCH. Basically this assembler normalizes the instruction to match the form in the opcode table. First it removes the operand labels and constants, replaces them with nn, and then removes the spaces and comma to compress it. A binary search of the opcode table retrieves the number of bytes for the instruction and its decimal code. If it finds no match, a syntax error flags the line on the assembly listing.

Lines 140 to 220 read a line of source, test for a comment line and a label, count, and put the labels in the label/symbol table. Lines 300 and 305 locate the positions of brackets and a comma in the instruction. Lines 310 to 330 steer the processing depending on its structure. In lines 350 to 460 the statement is

LD	C,(HL)	LD	L,C	RST	0
LD	C,A	LD	L,D	RST	16
LD	C,B	LD	L,E	RST	24
LD	C,C	LD	L,H	RST	32
LD	C,D	LD	L,L	RST	40
LD	C,E	LD	L,#10	RST	48
LD	C,H	LD	SP,HL	RST	56
LD	C,L	LD	SP,NN	RST	8
LD	C,#10	NOP		SBC	A,(HL)
LD	D,(HL)	OR	A	SBC	A,A
LD	D,A	OR	B	SBC	A,B
LD	D,B	OR	C	SBC	A,C
LD	D,C	OR	D	SBC	A,D
LD	D,D	OR	E	SBC	A,E
LD	D,E	* ORG	#58000	SBC	A,H
LD	D,H	OR	H	SBC	A,L
LD	D,L	OR	L	SBC	A,#10
LD	D,#10	OR	#10	SCF	
LD	DE,NN	OUT	A,#10	SIM	
LD	E,(HL)	POP	AF	* STRING	\$X
LD	E,A	POP	BC	SUB	(HL)
LD	E,B	POP	DE	SUB	A
LD	E,C	POP	HL	SUB	B
LD	E,D	PUSH	AF	SUB	C

What's New at 3M?

An electronic **Newsroom** — a first for journalists and investment analysts.

It's easy to use with any standard computer terminal and modem. Inside the **Newsroom** are 3M speeches, technology backgrounders, management biographies, financial reports, product releases — plus news about our space flight experiments. It is interactive to answer your questions confidentially. It might even give you a new story idea. The 3M **Newsroom** is free, 24 hours a day.

3M hears you . . .

For your login code, contact:

Jim Radford
Public Relations / 3M
3M Center, 225-5N
St. Paul, MN 55144-1000
612/733-4339

3M


```

LD      E,E          PUSH    BC          SUB    D
LD      E,H          PUSH    DE          SUB    E
LD      E,L          PUSH    HL          SUB    H

LD      E,#13        ** RDEL          ** SUB    HL,BC
LD      H,(HL)        RET          SUB    L
LD      H,A          RET    C          SUB    #10

LD      H,B          RET    M          ** WORD  #1000
LD      H,C          RET    NC         XOR    (HL)
LD      H,D          RET    NZ         XOR    A

LD      H,E          RET    P          XOR    B
LD      H,H          RET    PE         XOR    C
LD      H,L          RET    PO         XOR    D

** LD      HL,(DE)    ** RET    Z          XOR    E
LD      HL,(NN)      ** RHLR          XOR    H
LD      HL,NN        RIM              XOR    L

LD      H,#10        RLA              XOR    #0
LD      L,(HL)        RLCA
LD      L,A          RRA          * Decimal Constant= #0
LD      L,B          RRCA        * Ascii Constant = $A

```

NN= Symbol or label
 **= Undocumented Instructions
 *= Pseudo ops, Assembler Instructions

reassembled to match the form of the opcode table. Lines 500 to 520 remove the comma and spaces.

Lines 540 to 620 process the opcode. Lines 700 to 795 assemble the object code to memory on the second pass. Line 595 tests that the program counter (PC) is within MAXRAM and HIMEM. Lines 785 to 790 test that the EXEC address is within MAXRAM and HIMEM. And Lines 800 to 1,040 display the assembly listing for both passes.

The subroutines are: lines 5,000 to 5,100, the label/ symbol sort (sorting after the first pass if it was error free); lines 6,000 to 6,540, the label/symbol binary search routine; line 7,000 to 7,020 form an on error goto trap; and lines 9,000 to 9,500 are the opcode binary search routine.

It's a big program to type in. Errors will creep in, so to disable the on error goto trap, put an apostrophe after the colon in line 55. On error goto is a nice, useful command, but not when debugging a program.

HELP. If you need help or have a problem with Cobug, just drop me a line: Ronald F. Balonis, 118 Rice Street, Truckville, PA 18708. I'd be pleased to assist.





SURVEY-100

**Portable Land Surveying Software
for the TRS-80 Model 100**

- Plot while you compute through serial port.
- Read bar code data with built-in wand.
- Write bar code data with DMP printer for convenient paper storage.

- Telecommunicate through built-in 300-baud modem.
- Drive external disk-based computers through RS 232 interface.
- Print through parallel port.

Survey Software Associates
 4 Maher Avenue
 Greenwich, CT 06830
203 661-4869

Software only
\$195+\$3 S/H
VISA/MC



Model 100



CODE TEST



MINI-VAC

A BREAKTHROUGH IN MICRO-MAINTENANCE

Compact, efficient, light-weight, and completely portable, MINI-VAC is uniquely designed to remove minute particles of dust and debris. Unlike compressed air which simply disperses the pollutants, MINI-VAC vacuums them safely away.

THE PERFECT GIFT

MINI-VAC is equipped with vacuum and blower capability, two interchangeable wands, two fine brushes, a reusable cloth vacuum bag and it can be DC or AC powered. (AC-adaptor is optional). MINI-VAC is a great accessory for all computer owners.

MINI-VAC is priced at \$29.95 and has a full manufacturers warranty.



USES:

- Computer Keyboards
- Printer Mechanisms
- Video Recorders
- Camera Lenses
- Arts/Crafts Hobbies
- Any hard to reach area

To order please send check or money order for \$29.95 ea. to:

MINI-VAC
 P.O. Box 1143
 Maywood, New Jersey 07607
 N.J. Residents add 6% sales tax
MINI-VAC® MINI-VAC, Inc.

Spread—Part 3: A Maestro For Mortgages

Payments on a variable
rather than a fixed mortgage
may take the sting
out of monthly payments,
but they're murder to figure.

Spread offers a detailed
Mortgage Schedule Model
for quicker payment analysis.

By WOODS MARTIN

Nuts to you! That's the slick new slogan of the Penurious Peanut Company (PPC). Last month we followed the company as it put the business into the care of the Model 100 and Spread. Since watching its peanuts and cashews, PPC is rolling in the dough.

The money spent to have an ad agency develop this motto was added to Fixed G & A Expenses in the Profit and Loss Model we called >PNUT.DO. Profits were immediately reduced, but PPC expects the public relations blitz to more than make up for it.

I'm assuming you read about PPC in the December 1984 and February 1985 issues of Portable 100 and now are adept at manipulating data in Spread. If you're just joining us, you'll find the program listing in a copy of the December issue.

Another option is to download the program and files in Table 1 from one of the bulletin boards listed.

SPREADING OUT. As promised, this month we're going to push Spread close to its practical limits. Penurious Peanut in its newfound success is outgrowing its packing plant and needs to expand.

A lease or buy decision must be made. Having its own plant will look good on a balance sheet but the cash flow from selling mixed nuts must be able to support the mortgage payments. This is further complicated by today's market in which most lenders demand a variable interest rate.

What will the payments be at the current rate and how will they be affected if the rate changes next year? Let's de-

sign a Mortgage Schedule model which will answer those questions and print out a detailed payment analysis for each year of the loan—even if the interest rate changes.

SPEED PATCHES. Some practical matters. This model will run on a 24K machine using Spread unmodified but it'll be slow because of string garbage collection. With Spread saved in memory, MENU should show at least 7700 bytes free. There won't be room to save the model to memory so cassette or disk will have to be used.

To speed things up on 24K and a whole lot on 32K machines, I recommend merging of patch SPAT02.WM3 which was printed last month and is available on the bulletin boards. Transfer the patch into memory as a document file and then load Spread.

Type MERGE "SPAT02". When ready appears, type KILL "SPAT02.DO". You can leave your copy of Spread patched permanently because the options enabled may come in handy again.

RUN. Run Spread. If you did not install SPAT02, skip to the next paragraph, otherwise the following dialog will appear on the LCD screen:

Clear<3037>?

Type 4037 enter for 24K

Type 7037 enter for 32K

(Pressing enter alone would accept 3037 as default, these values can be increased if no DVI is used.)

cm<19>?

Type 7 enter for eight columns (H) including 0

(Enter alone would accept 19 or T as default.)

rm<20>?

Type 23 enter for 24 rows including 0 (Enter alone would accept 20 as default.)

Spread will display its column max, row max, and precision banner:

spr cm=H rm=23 p=D <ENTER or new cm?

Type H regardless of what is first displayed

precision: SorD p=

Type D to select double precision and then enter

VARIOUS DISPLAYS. If the Model 100 is connected to the Disk-Video Interface, an unpatched copy of Spread will now switch to the CRT monitor display. If patch SPAT01.WM3 (also printed last month) has been installed, CRT Y/N? will display to allow you to select the display mode.

The empty Spread model will display on the screen. (If the CRT is being used, change to 80-column display if needed with the /GW command.) If you don't need the practice in entering data and replicating, the model can be downloaded from one of the bulletin boards as SMMORT.DO. Readers also can obtain a copy of the listing by writing to Portable 100's Technical Editor, Alan Zeichick.

RELATIONAL OPERATORS. We specified a one year loan to start in April of 1985. Note that interest, principal, escrow and total payment amounts for January through March are all zero. The formulas use the relational operators to decide if a month is valid or not.

MARINE NAVIGATION

With **DIGITAL NAVIGATOR** you can readily utilize the power of today's most popular notebook computers to perform otherwise time consuming calculations. Programs utilize the large LCD display for complete input and output presentations. User friendly routines have extensive input checking and support optional printed output. Interactive data files eliminate tedious re-entry of data.

DIGITAL NAVIGATOR includes Planning routines for Rhumb Line and Great Circle Sailing with Longitude Intercepts, Incremental Distances, and Limiting Latitudes. Celestial routines include Nautical Almanac information for Sun, Moon, Venus, Mars, Jupiter, Saturn, and 58 Stars with navigational accuracies to the year 2100; Complete Sight Reduction with Fixes determined from Noon Sight, two or multiple LOP's; Sunrise and Sunset celestial positions for pre-sight planning. Plane Sailing routines for numerous Vector solutions, automatic Dead Reckoning updates, Course & Speed Made Good, and Distance to Object.

All features extensively presented with examples in bound manual. Programs utilized by Recreational and Merchant Marine personnel.

Order **DIGITAL NAVIGATOR** (Cassette and Manual) by sending \$67.75 (CA Residents \$72.15) via VISA/MC, Check, Money Order or COD. Specify Computer as TRS-80 Model 100 (24K) or NEC 8201A (24K).

PACIFIC MARINE CORPORATION

Dept. W
2410 E. 5th Street
Long Beach, CA 90814
(213) 433-7815

33 ON READER SERVICE CARD

AUTO PLOT for the TRS-80 MODEL 100 (16k +)

and the **CGP-115** Color Graphic Printer

A picture is worth a thousand words. Now you can produce color graphs of professional quality effortlessly in minutes wherever you go. Plot tabulated data or functions. Choose from line graphs, scatter plots, bar graphs and more. Axes are automatically scaled and labelled. A few keystrokes select from many options, such as plot size, continuous curves and/or separate marks, multiple curves, optional grid overlay, linear or log plots, numeric integration or differentiation. . . . A label-maker program lets you add fancy titles or legends. **AUTO PLOT** is written in BASIC and comes on cassette, together with an exceptionally clear 28-page manual.

Why such a small ad for such a fantastic program? By keeping down our overhead, we can offer you **AUTO PLOT** at the unheard-of price of **\$49.50**

Special: \$39.50 thru 3/1/85

Also available:

AUTO PLOT for TRS-80 Model I/III (48k, 1 disk and **CGP-115**...\$69.50

AUTO PLOT for TRS-80 Model I/III and EPSON printer with Graphtrax...\$79.50

Please add \$3.00 for shipping and handling CA residents please add sales tax. Phone orders. VISA and MASTERCARD welcome.

MENLO SYSTEMS

3790 El Camino Real, Suite 221
Palo Alto, CA 94306, Tel (415) 856-0727

TRS-80, CGP-115. TM of Tandy Corp.

30 ON READER SERVICE CARD

SPREAD THREE

Column D at the top shows the results of the initial calculation with the monthly interest rate, term in months, months elapsed since loan inception, balance of principal, and the principal and interest monthly payment.

We have set up the model with an empty row so enter H22. The table will print at the top of the paper.

To calculate the next year, just press ! again and go for another cup of coffee. When complete, note that the last payment was in March 1986 and that all the values after that date are zero.

BY TWOS. Again, this model is set up to sense that the loan has been paid off and to stop making payments. Go to A0 and enter /PP to print. This time, enter H23 when lower right is displayed. An ASCII 140 will be sent to your printer at the end which, if it is set for seven bit input as most are, will be interpreted as a form feed. This method of first using H22 as lower right followed by H23 will allow long term schedules to be neatly printed, two years per page.

When you've finished there are two ways to zero the model in order to process another loan. One is to simply clear the model (/SCY) and then reload it. Another is to set the principal amount at B1 to zero and recalculate with !. A zero principal will force all other values to zero.

Why not try a longer term loan, either one for Penurious or maybe your own mortgage. Each recalculation will add one more year until the loan is finally paid off. The interest rate can be changed before recalculating any year so the effect of a variable rate change can be displayed.

CHEAP SERVANT. I've been working on techniques to speed things up by reducing trips to the garbage collector but that's another story. If you need a spreadsheet program to handle models this complex on a daily basis, you should look at one of the commercial machine-language offerings. However, if you're a patient person, Spread will serve you well and cheaply. □

Editor's Note: This is the third and final installment of Wood's series on Spread, a spreadsheet written in Basic and refined over several months by members of the Model 100 Special Interest Group on CompuServe. The original program was written by Terry Dettman and appeared in Basic Computing. This version of the program incorporates ideas from SIG members Don Hergert, Gary Bender, Chris Young, and Joel Hassel.

Model 100 - NEC PC 8201A Olivetti M10 PORTABLE SOFTWARE

COMPACT, POWERFUL AND EASY TO USE

SPECIAL (Model 100 & NEC only) \$89.50 - About all you need on one tape. Includes: AutoPen, AutoPad, AutoBase, AutoSort, TFILE, TRIP, CALC and AutoPen N&A. Over 50% off separate prices.

AutoPen (2.5K) \$29.95 - Word processing using standard formats. 22 text commands for format control. Print from RAM, tape and keyboard; chain files; multiple copies; continuous or cut paper; and more features. Customize for your printer. Best available for size and price.

AutoPen, N&A (3.7K) \$39.50 - Merges names, addresses and salutations into letters, prints labels and addresses envelopes. N&A data management system. Includes AutoPen.

AutoPad (5.4K) \$39.50 - 26 by 99 spreadsheet. Variable column width and format. Math, statistical and financial functions. Sort, replicate, calculator and other features. Printer output with titles and footnotes.

AutoBase (2K) \$29.50 - Database management for limited RAM. Design input forms using up to 16 fields. Use up to 9 keyword or relational field criteria to select records for display or printing. Print forms or specific fields in a list or label format.

AutoSort (.4K) \$14.50 - Sort single or multiple (AutoBase, N&A, INDEX, etc.) field records.

BOOK (3.8K) \$29.50 - Single entry book-keeping for self employed or small businesses using SCHEDULE C tax accounts. Summary review and detailed printer output.

TFILE (1.4K) \$29.50 - Tape file utility to review, compute size, delete, and auto save or load files. Tape directory with printer output.

TRIP (2K) \$29.50 - Itinerary, expense account and trip report. Review and printer output.

CHECK (2K) \$29.50 - Maintains account balance and records. Review and printer output.

INDEX (3.4K) \$29.50 - Sorts and prints multi column lists. Indexes page references.

CALC (.6K) \$14.50 - Allows you to use your computer like a simple pocket calculator.

Add \$2.00 for mailing and handling

SPECIAL PRICES ON COMPUTERS AND ACCESSORIES

**CSA Software, Box 22261
Chattanooga, TN 37422
Phone: 615-892-2339**



DEALERS INQUIRE



12 ON READER SERVICE CARD

modem cable for these transfers are included in the Telecommuter package by Siga.)

MINOR PROBLEMS. While Telecommuter is a first rate program, it has several minor annoying features.

Its copy-protection scheme requires the original disk be in drive A when entering the program. Since the program loads into RAM, the disk can be removed after entering the program. If something is going to happen to the disk, it'll happen to it at this point. And if something happens to it, you're stuck. You can't get into the system with a backup disk in drive A.

Most important functions are handled within Telecommuter, but killing files and creating directories is easier done from DOS. Once you enter DOS, though, you have to reinsert the original Telecommuter disk to return to the program. This is awkward at best.

The program is slow in accessing ADPS.DO entries. If an entry is at the top of the file, it's found fast, but the farther down in the file the record is, the longer it takes Telecommuter to find it. (According to Siga officials, however, access speed has been improved in the latest version of the program.)

DOCUMENTATION. Telecommuter's 222-page manual is clear and easy to understand. It includes a helpful applications section showing how to use the program in several useful ways. The program also includes on-line help should you forget a command.

Portable computer manufacturers would be wise to take note of Telecommuter. The program offers the best chance for lap-top to desk-top marital bliss I've seen to date.

NEC USER REJOICES OVER INTERNAL MODEM

TouchBase Modem

TouchBase Design
1447 S. Crest Drive
Los Angeles, CA 90035
213-277-1208
\$129

By **BOB RYDEEN**

At the time my company was faced with making a decision about lap computers, the selection was limited to Radio Shack, NEC, and Epson products. The choice was difficult.

Because our needs were primarily text oriented, we believed the NEC 8201A, with its 64K RAM memory and 32 virtual RAM cartridges, would be our best choice. We felt that while the exclusivity of software for the TRS-80 Model 100 wouldn't be a problem with the NEC, the lack of a built-in modem would be. Thus the bottom line: the need for extensive text storage took precedence over the occasional requirement for a modem. The NEC, along with an Anchor Automation Mark VII for telecommunicating would do the job.

Then along came MCI mail and our requirement to contact both our offices and various data bases when out of town. The NECs were working flawlessly but their lack of an internal modem would soon take its toll.

ENTER TOUCHBASE. Recent issues of Portable 100 had been carrying advertisements for TouchBase Design which offered a 300-baud full-duplex, Bell 103 compatible internally mounted-powered modem for \$99.95. It sounded too good to be true.

Calling the Los Angeles-based company confirmed the advertised \$99.95 model, but also introduced a newer

Introducing...

The Largest Selection of High Quality **Battery-Powered** Peripherals

Take Your Pick... With You!



ThinPrint 80™

40 CPS Thermal Dot Matrix Printer with Hi Res Graphics. Silent. Built-in Paper Compartment. 5 lbs.



ThinWrite 80™

50 CPS Dot Matrix Impact Correspondence or Near Letter Quality Prints 3-part Forms and P.C. Graphics. 7 lbs.



ThinType 80™

15 CPS Bi-Directional Letter Quality Impact Printer. Fully Formed Char. Internal A/C Charge/Adapter. 7 lbs. (5 lbs. optional)



ThinView 25™

80 Char. x 25 Line LCD Intelligent Display System. Optional Tactile Input. Bit Image Graphics. 3 lbs.

Built-in Rechargeable Batteries save you time and dollars in replacements.
Proven parallel and serial interfaces on M100, PX-8, 2C, HP-IL and many others.

Axonix



Call Toll Free **800-821-7093** or 801-582-9271
DEALER INQUIRIES INVITED

The Portable Peripherals People
417 Wakara Way, S.L.C., Utah 84108

one for \$129.95. This was no bait-and-switch tactic. I still could choose the less expensive model, but opted for the improved version which included originate capabilities.

Because TouchBase Design doesn't accept plastic, a COD shipment was agreed upon. As promised my new TouchBase modem arrived several days later. Although the package lacked fancy wrappings, a quick perusal of the contents showed the only scrimping done was in marketing. The modem looked wonderful.

The board was compact and clean. Assembly quality was exceptional. The design of the color-coded miniconnectors was of particular note guaranteeing both ease of installation and electronic integrity. In addition, by making optional the use of a visual carrier detect-indication, the manufacturers had assured painless installation.

EASY INSTRUCTIONS. Documentation was the best I've seen and following it was a breeze. The many pictures and drawings in the text made foul ups almost impossible. For this review I was tempted to have my computer-hating, non-mechanical wife assemble it ... but I'm sure even she would have suc-

ceeded.

Installation took less than fifteen minutes. Hooking TouchBase to a modular phone and then to a data base was simple. Next step was to dial a number on the phone and, when you hear the tone, turn on the computer, hang up the handset, and accomplish whatever protocol the data base demands. **PROMPT SUPPORT.** Experience dictates that the only fair way to ascertain how a company will treat a customer is to act like one. If you let on that you're calling because you're writing a review, obviously staff will bend over backwards to help you. (The reverse works too, if you ever get stuck.)

So in this case, I called TouchBase Design with a fictitious problem which enabled me to discover to what extent their knowledge and patience would stretch. My call was answered by the same person who had taken my original order. When I explained my problem, she told me the technicians weren't available, but she would have one get back to me. I was skeptical.

My pessimism was shattered when Scott Stogel, a staff technician, returned my call at his company's expense only

fifteen minutes later. He was courteous, knowledgeable, and patient. After unsuccessfully finishing a very thorough 20-minute trouble-shooting session, Scott suggested a couple more tests to try on my own.

He called me back within a half hour to see how I had made out, and to continue the session. At this point I called off the charade, feeling very satisfied by their support and a bit chagrined by my deception.

NEC HEAVEN. Unlike NEC's own unit, a renamed Anchor Automation Volks-modem, the TouchBase model fills a definite need with a high-quality product. As a plus TouchBase Design's policies make it easy to recommend them.

There's been a software package promised by them that'll be written in 100 percent Basic, feature an auto-dialer, and pulse dial system. There's been some question as to whether the program will be free, or cost a nominal \$10 postpaid. No matter, by the time this review is published I will have received my software package which will turn my NEC into a machine able to emulate the Model 100's telecommunication capabilities. □

Polar Engineering and Consulting is FIRST again!

**Now YOU can put YOUR SOFTWARE
in a ROM for the MODEL 100
or NEC 8201A with**

POLARIS

**The ROM Development System from Polar Engineering
and Consulting designed especially for the manufactur-
ers of consumer software, in-house software, vertical
market software and turnkey systems.**

For information contact:

**POLAR ENGINEERING AND CONSULTING
BOX 7188, NIKISHKA, ALASKA 99635 (907) 776-5529**

I don't know when I've been so happy with a product and its manufacturer. Thanks to their efforts, NEC owners now have the best of all worlds. □

THINK TANK COMES TO THE MODEL 100

Idea 2.12

Traveling Software Inc.
11050 Fifth Avenue NE
Seattle, WA 98125
Size: 9K
\$79.95

By JOHN P. MELLO JR.

Idea processors have been slapped with a bum rap lately, victims of their own hype. Product names like Think Tank suggest more than these programs deliver and writers have been quick to flagellate that point.

As many reviewers have observed, these programs make outlines, a simple task, but nonetheless a valuable one — something lost in the din of distraction.

Traveling Software's Idea gives the Model 100 outlining capability, a function I've found to be as valuable as the portable's built-in text program. It lets you have up to 250 ideas in 99 levels. For example, ideas in level one include What is it?, Numerology, and Function Keys; level two ideas include spreadsheet for ideas, 99 levels of ideas, key one and key two. You may elaborate on any idea on any level with up to six lines of text.

FUNCTION ACCESS. Idea lets you access 16 functions through the 100's function keys. In the first set of functions, you can edit an idea (F3), delete an idea (F4), find a string within a file or level (F6), go to the top of the file (F7), or return to the top of the program (F8).

To insert an idea, you place the cursor beside an existing idea and press function key (F2). Placing the cursor beside an idea numbered one and pressing F2, for example, will create a new idea one and make the old idea one idea two.

To expand an idea, you place the cursor beside the idea and press F1 or enter. This places you in a new level. The controlling idea (the idea in the previous level) is displayed in reverse video on line one of the 100's LCD. Move the cursor down one line and press F2. I found this awkward and felt the additional cursor move unneces-

sary. Once I entered the new level, pressing F2 should be sufficient to begin a new idea.

SECOND SET. You access the second set of functions by pressing F5. These functions let you select an idea (F2) for movement (F3) or copying (F4) of other parts of the outline; print (F6), with or without numbers, the entire file, a portion of the file, or the ideas without descriptive paragraphs; sort the file or a level of ideas (F7); or return to the first set of functions (F5) or to the top of the program (F8).

F1, expand-compress, remains the same in both sets of functions. When the key is labeled expand, pressing it will take you to the underlying level of ideas. When the key is labeled compress, pressing it will take you to the controlling level of ideas.

You can move the cursor in Idea by character (left or right arrow), idea (up and down arrow), beginning or ending of a line (shift plus left or right arrow), top or bottom of a screen (shift-up or down arrow), top or bottom of a level (control-up or down arrow). I missed not being able to move the cursor left or right by word. And if an arrow key is held down, the cursor disappears until you remove your finger.

SLOW BUT EASY. Like other Traveling Software programs, Idea is slow to update the LCD and unable to keep up with even a minimal typist like myself.

There's no word wrap when entering descriptive paragraphs. Initially, this is disconcerting, but I adjusted to it. The print function of the program, however, supports word wrap.

While I had a production version of the program for review, I didn't have a final version of the software's documentation. However, I found the program easy to use even with the preliminary user's guide.

LEFTOUT OPTIONS. One drawback of the program is its size. At 9K, it's a hefty item to have floating inside a 100.

Because Traveling tried to keep the program's size down, some options had to be left out. Traveling explains how to install these options — changing the output device, left-right margins, lines per page — by modifying the program. This came in handy, since I wanted my outlines in digital form, where I could upload them into a micro and flush them out in a word processor.

SECOND SKIN. While Idea suffers from the hardware constraints of the 100, I found it an invaluable tool. It has become as much a part of my 100 as Text and Telcom, like a second skin. □

LOTS OF YUKS, NO GUITARS

A New York City comic has decided that something needs to be done about the Information Age's lack of humor. As he says, "Man now has the power to become as bored as he wants to."

Comedy by Wire is an on-line newsletter created by William Coronel that will cover "overlooked news, stupid product reviews, unknown industry trends, and superficial interviews with the seriously misinformed. But never any news about electric guitars."

The service (dubious as it may be) is available through the Source (public 153 direct at common level) and Delphi in the informania section under newsletter.

Take my computer — please...

PRODUCTION DELAYS KILL NEW LAP ENTRY

Kaypro cancelled at the tag end of last year its agreement with Mitsui and company to purchase that company's portable entry.

Down but not out, the Solana Beach manufacturer said it would go with its own in-house model that had been developed as a back-up to the Mitsui-developed product.

Problems with bundled software was the stated reason for the cancellation of the IBM-compatible lap computer. Delays would have pushed delivery from late summer of 1984 to the last quarter of 1985.

Rumors have it that Mitsui may also have signed an agreement to sell the same machine to Zenith Data Systems.

CLEAN INDUSTRY?

High-tech firms "discharge, dump and emit toxics" into the environment at an alarming rate, according to a recent study produced by the Task Force on High Tech Toxics and funded by the Clean Water Action Project, the AFL-CIO, and the Communications Workers of America.

Kenneth Geiser, an assistant professor of urban and environmental policy at Tufts University, released the report that cited ground water contamination in Burlington, MA, and a linkage to corrosion of town sewer lines as one example. "Unpermitted discharges and permit violations must be stopped. High-tech firms must be brought into compliance with... regulations." □

100 MARKETPLACE 200

71

"SKIP TH' CHAMPAGNE, MAC, JUS' GIMME THE 100"

We clipped an ad from a Wall Street Journal of a week ago that said: "Good things come to those who stay on The Hill. At the new Sheraton Grand, you'll be surrounded by good things. Marble from Italy. Silk from the Orient. And original works of art. But even more will come to you — personally. A welcoming glass of champagne. A robe as soft as lambs' wool. A cordial with your turn-down service. Anything ... from barbells to a personal computer can be yours upon request. Now, all sorts of Grand things can come from a trip to Washington. For reservations call toll-free (800) 325-3535, the Sheraton Grand on Capitol Hill."

The art shows a Model 100 being served on a satin pillow by a guy in a black tie. For that, we give the Sheraton Grand four stars. We give you the toll-free res. number so you can try to stay there next time you're in town.

The basic room rate is \$125 for two. The bottom add-on charge for your 100-in-the-room is \$60 per day.

Land sakes, at those prices you could buy your own Model 100 in two days, and sleep on a park bench across from the White House — much closer to the action.

100s ASKING LOTS OF QUESTIONS

A University of Cincinnati planning professor uses Model 100s in the field surveying.

Sam Sherrill thinks his two-year experience should prove a boon to small businesses and non-profit organizations in inexpensive canvassing.

As assistant professor of planning, Sherrill has been involved with micro-based survey systems for hospitals, local Community Chest/United Appeal, and the Southwest Ohio Regional Transit Authority.

Sherrill says "eliminating the drudgery and errors in paper-based surveying and freeing interviewers from the mechanical part of the process so they can concentrate on getting a good in-

terview" is the benefit.

The Model 100 was used in a ridership survey for a metropolitan transit company. Here the questionnaire was "filledout" on 100s in the field and the information fed back to a desktop micro via modem.

Results suggested the collection of data could be done far faster and cheaper with the 100s than with paper questionnaires. Writing of reports was also easier.

Sherrill said that only shortcomings of taking a portable into the field were concerns expressed by interviewers: fear of damaging the computers, fear of losing the data, fear of being robbed, and discomfort in trying to use the lap-size computer on a moving city bus.

INFOWORLD GIVES P100/200 A PLUG

The People department in the December 24 issue of InfoWorld attributed a solution to that noisy key clatter:

"Hal Glatzer, a journalist who uses a NEC 8201 lap computer, thereby suffering the Heartbreak of Loud Key Clicks ... joined the ranks of writers who attended Comdex this year. He cornered us at a party to tell us that, thanks to an article by T. Allan Trick in the October issue of Portable 100 magazine, he had at long last found the solution to the nasty problem that irritated everyone sitting around him. At least the key click problem, that is."

He did. He did, indeed. Trick's solution was a neat trick at that: orthodontic rubber bands.

Thanks, InforWorld. Mankind does progress by littles, me thinks.

HOME COMPUTERS BIG X-MAS WINNERS

According to a study by Future Computing, "nearly half of all home computer purchases in 1984 (were made) during the Christmas shopping season."

FC's vice president Bill Ablondi says

this upsurge resulted partly due to "dramatic changes in the home computer customer. (The) buyer is willing to spend more money. Sixty percent ... are willing to spend between \$500 and \$2,000 on a home computer."

This compares with 30% of pre-Christmas period purchases at a level of \$500 or higher.

The change, opines Ablondi, is that more people are now perceiving the home computer as a "relevant item."

NEWSNET EXPANDS BUSINESS OFFERINGS

Reports covering 22 different industries are now available on NewsNet. Each week, the Investext series of electronic newsletters provides timely brokerage research reports on categories ranging from aerospace to utilities.

Reports include news bulletins, corporate analysis, and overviews prepared by professional analysts from leading brokerage houses.

Market share, strategy, new product news, R&D, acquisition and divestiture, competitive analysis, management changes, and that all important staple of the investment industry — juicy gossip.

Business Research corporation publishes Investext each Monday in electronic form only.

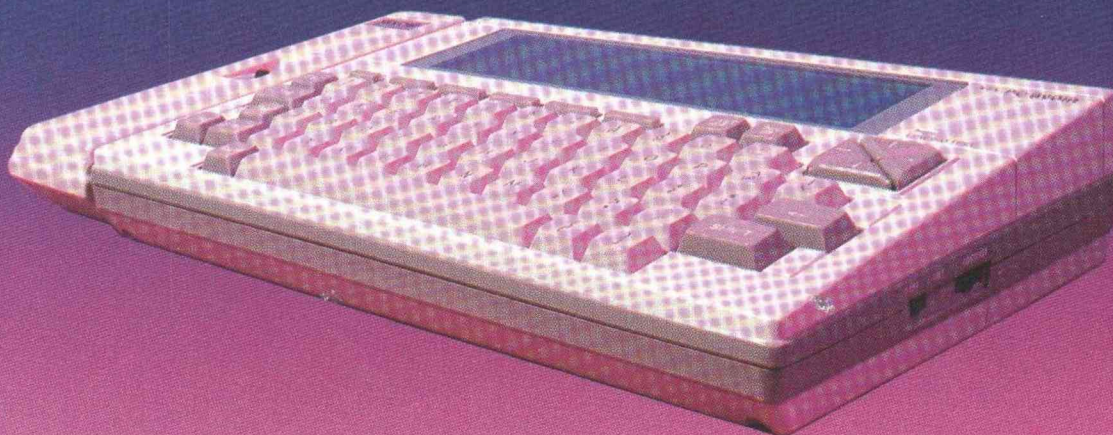
DOT MATRIX SEX JUST ISN'T THE SAME SOMEHOW

There are — get this! — nearly 20 sexually explicit computer programs among 1984's 30-thousand titles. Up 30% from '83's totals.

Micro Information Publishing and Research, Inc. of Prior Lake, MN, makes the announcement. Dirty Old Man is an animated cartoon. Street Life is a program that lets you play pimp for several hookers while trying to avoid the police.

Thanks, but we'll pass.

continued on page 70



NEC 32K *vs.* SIDECAR 128K

Up To 192K Of Memory On-line For Your NEC PC-8201 Means Goodbye To Unreliable Cassettes, And Bulky Disk Drives.

The problem with most portables is utility gets sacrificed for portability. Only being able to take 32K of files with you is a real pain. Things like form letters, data bases, spreadsheet layouts, and other files have to either be left behind or you have to mess with external storage devices. The inconvenience of having to bring along cassette players, and disk drives (not to mention the hassle getting them to work) can make you wonder why you brought this "productivity tool" in the first place.

THE NEC SOLUTIONS

The NEC PC-8201 has two solutions for this problem. First it has the ability to house up to 64K of RAM inside the machine. Through a technique called "bank switching" you can access up to three different 32K "banks" of memory: two inside the computer and one in a plug-in cartridge. This is a big improvement. But the problem here is each additional 32K cartridge from NEC costs \$395.

PURPLE'S SOLUTION

Many of you will remember us as the first company to manufacture an aftermarket 8K memory module for installation inside the computer. This product was so successful that other companies copied it. Our customers

kept asking for more storage, and the result is our SideCar™. It uses a bank switching system similar to NEC's to let you access up to *four additional banks of 32K, giving the NEC PC-8201 up to 192K of on-line memory!* Now there really is a portable computer of amazing proportions.

THE PORTABLE SOLUTION

Now you can have gobs of data instantly available at the flick of a switch. The SideCar™ plugs into the NEC PC-8201 in the same slot the NEC 32K cartridge uses. The memory is powered by two standard size AA batteries when the computer is not in use. You can even change the batteries without losing the data. SideCar™ comes standard with 32K of memory, with up to three additional 32K modules available giving it a total capacity of 128K. They are simple plug-in options so you can buy a 32K version now and add memory as needed. The batteries will support the memory for up to one year.

NO RISK OFFER

We give you a 30 day satisfaction guarantee and a 1 year warranty on your SideCar™. If you are not completely satisfied for any reason, we will refund the entire amount of your

purchase. If at any time during the one year warranty period your SideCar™ requires service, we will fix or replace it within 48 hours.

THE BOTTOM LINE

The basic 32K SideCar™ with 32K in bank 1, expandable to 128K, is \$199 (Part #SC32). User installable 32K banks are \$100 for bank 2 (Part #SCB2), and \$110 each for bank 3 and 4 (Part #SCB34). If ordered together the banks are installed and tested at the factory.

Price includes shipping, and insurance in the continental USA. Your SideCar™ will be shipped the next business day via UPS surface freight. If you want 2nd day air service, just add \$4. No extra charge for VISA/MasterCard, or American Express. For fastest delivery send certified checks or credit card. Calif. residents add 6% sales tax. Personal checks take 3 weeks to clear. Call for purchase order information.

PURPLE COMPUTING

2068 Ventura Blvd.
Camarillo, CA 93010

Outside California toll free
(800) 732-5012

Inside California (805) 987-4788

Traveling Software® has a bright new ...

IDEA



The first
Outline
Processor
for
lap-sized
computers.

Traveling Software® has a great new IDEA! ... Traveling Idea Manager™ is an idea processor similar to Think Tank¹ or Framework². The distinction is that IDEA goes well beyond other idea processors. IDEA was designed and written specifically for your Model 100, NEC 8201 or Olivetti M10 portable computer.

IDEA is an organizational program so flexible it will take you from the brainstorming stage of a business proposal to the final organization of a report or presentation. It is so versatile it will format text and manage sales leads in a database as well as document your upcoming appointments. IDEA is as far ahead of its time now — as portable computers were just two years ago. IDEA is the perfect organizational business program for portable computer use today!

IDEA - \$59.95 until March 1, 1985 Save \$20.00

Call to order 1-800-343-8080.

IDEA is also available at your Radio Shack store through the Express Order program, as well as many other Traveling Software programs.

Traveling Software, 11050 Fifth Ave., Seattle, Wa. 98125

¹Think Tank is a trademark of Living Videotext, Inc. ²Framework is a trademark of Ashton-Tate, Inc.

